CALIFORNIA
OIL WORLD
and Petroleum Industry

FOR MANY SERVICES THESE IRON BODY VALVES WILL SERVE AS WELL AS BRONZE

Fig. 1640

Fig. 1640 "KING-CLIP"—a sturdy iron body gate valve with internal working parts of bronze, for hard and continuous usage. It has wide application in industry and in many cases will serve as well as a bronze valve.

Fig. 1021

Fig. 1021 "FERRENEWO"—an iron body bronze mounted globe valve for numerous services. All parts are renewable and the seat and disc are easy to regrind. An excellent valve with low upkeep.

—and with proper priorities, you are likely to get better deliveries . . . . .

The availability of bronze valves is becoming an increasingly critical problem, because of the scarcity of copper, tin, and other vital materials necessary in their manufacture.

We recommend consideration of these iron body "King-clip" gate and "Ferrenewo" globe patterns as alternates.

Since virtually all materials used in the manufacture of valves are on the list of critical materials, valve users are urged to furnish the highest possible preference ratings and proper "end use" Allocation Classification Symbols on their orders. This will be of mutual helpfulness.

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NEW YORK CHICAGO
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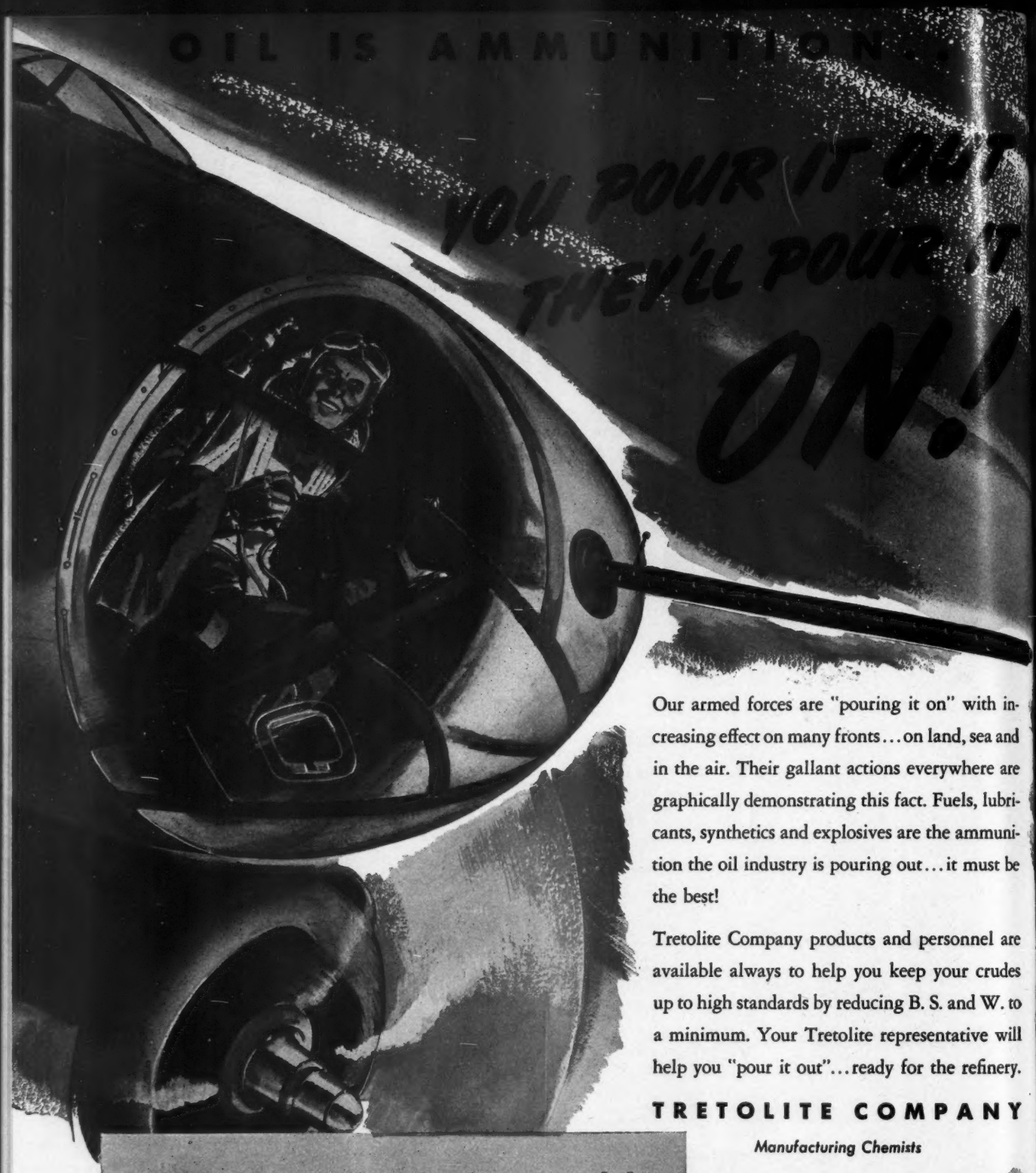
LUNKENHEIMER VALVES

Vol. 35
No. 18
Whole
No. 1617



Our armed forces are "pouring it on" with increasing effect on many fronts... on land, sea and in the air. Their gallant actions everywhere are graphically demonstrating this fact. Fuels, lubricants, synthetics and explosives are the ammunition the oil industry is pouring out... it must be the best!

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CALIFORNIA
OIL WORLD
and Petroleum Industry

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September 28, 1942

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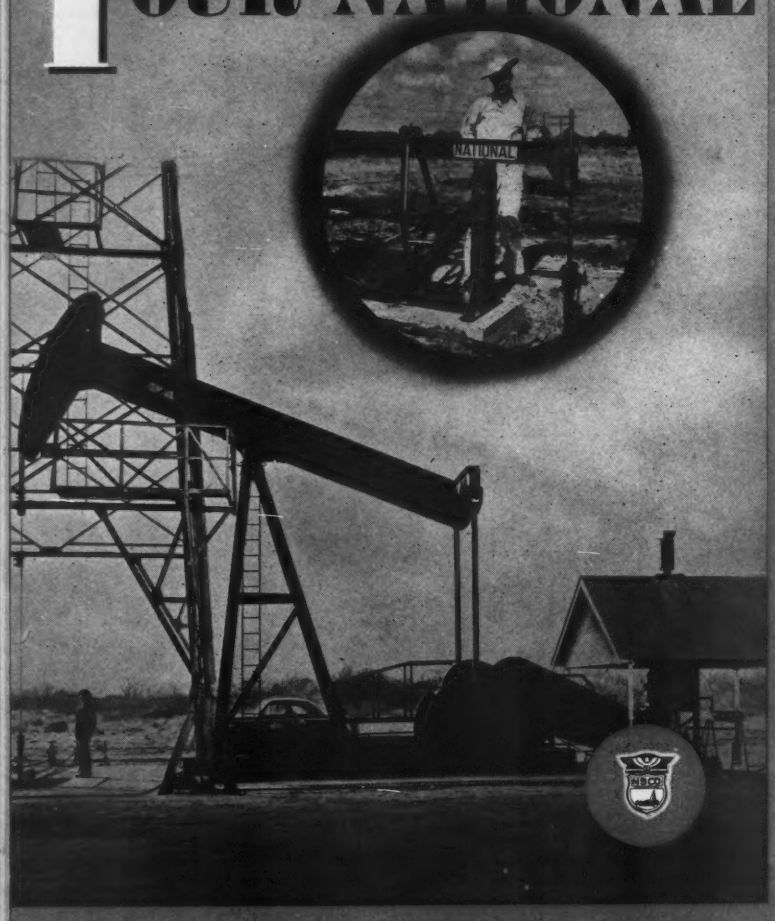
YOUR NATIONAL UNIT PUMPERS



● National Unit Pumpers were designed to do a specific job by engineers of practical and diversified experience in the oil fields... They are built under strict technical supervision from the highest grade of materials by men skilled in their crafts.

From the drafting board to the testing laboratory no effort is spared to make them capable of rendering long, efficient and economical performance.

Irrespective of size or type, you are entitled to expect the fullest measure of service from your National Unit Pumper. If you are not getting it, call the nearest National store or office for an equipment check-up by our field engineering staff. You will find them most helpful in the solution of your pumping problems.

In designing National Unit Pumpers our engineers have endeavored to incorporate every mechanical refinement to minimize operating care and maintenance. Although they have accomplished this to an extensive degree, regular attention is conducive to longer life and continued efficient service.

We Recommend the Following Maintenance Schedule:

- CHANGE OIL each fall and spring or more often if atmospheric or operating conditions cause sweating of case walls and contamination and sludging of oil.
- USE PROPER OIL as specified on name plate. This should be a high grade, well refined petroleum oil of recommended viscosity and cold test. It must be non-corrosive to gears, roller bearings and bronze parts, containing no abrasive matter, and have good defoaming properties.
- CHECK GREASE FITTINGS at least once a week, adding lubricant when necessary. If the lubricating is properly done, these frequent inspections are only precautionary, and actual additions of lubricant will be necessary only at long intervals. Add grease carefully in order that the small relief valve may function when reservoir is filled. Oil seals should be checked for possible damage from too rapid filling with high pressure guns.
- USE PROPER ROLLER BEARING LUBRICANT. A fluid lubricant such as transmission oil is recommended for walking beam and wrist pin bearings—particularly the needle types. Avoid low grade, heavy cup greases which may cake and lock the rollers.
- CHECK ALL BOLTS FOR TIGHTNESS AT REGULAR INTERVALS.
- KEEP THE PUMPER CLEAN AND REPAINT WHEN NECESSARY.
- USE SHORTEST STROKE possible consistent with reasonable speed and well requirements, as this will reduce the gear load.
- USE PROPER PUMPING SPEED to avoid pounding fluid which imposes excessive loads on all equipment.
- ADJUST COUNTERWEIGHTS to meet changing well conditions. This will reduce the pumper load and save power. Most National units are equipped with crank counterweights, permitting easy and accurate adjustment. *WHY NOT MAKE USE OF THIS FEATURE?*

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Administrative Highlights •

Effect of gasoline rationing on the California oil industry is the foremost topic of interest at the moment, with forecasts ranging from intimations that conditions will be chaotic to intimations that, except for a temporary accumulation of motor fuel in storage immediately following the actual effective date of rationing, the industry will be able to absorb the shock almost in stride.

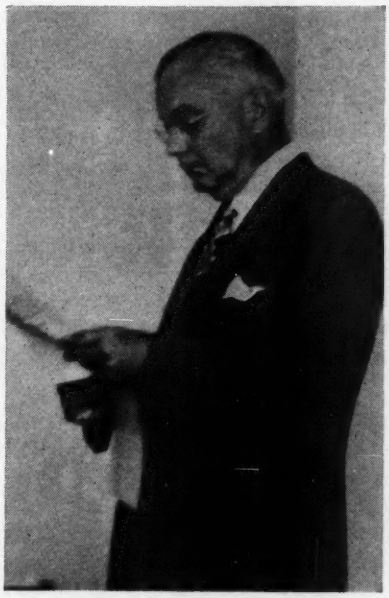
It is too early to make any estimates with any degree of authority, but a review of the first few months of the year compared with the same months of last year may serve as a basis for appraising the future.

There has already been a considerable decline in consumption of gasoline by the ordinary motorist. Figures of the State Board of Equalization show that taxable sales for the first seven months of 1942—the latest figures published—declined approximately 14 per cent from the levels of the like period of 1941, yet there has been no accumulation of gasoline in storage. U. S. Bureau of Mines figures for the same period show that 1,100,000 barrels of gasoline have been taken out of storage, the total at the end of July being 20,316,000 barrels, in the face of the decline in civilian consumption.

Generally accounting for the comparatively healthy gasoline storage condition, which is much better than it was expected to be, are increases in military consumption and decreases in gasoline production. The former is a military secret, of course, yet it is known that military and lend lease demands are much higher than had been expected.

Gasoline production has been reduced in two ways: by adjustments of refinery yields and by adjustments of crude production through the method of allocation currently in use by the Production Committee for District No. 5.

The OPC has twice requested refiners to reduce their gasoline yields by 10 per cent, to increase yields of fuel oil as well as to cut production of gasoline. California refiners have reduced yields, as is indicated by Bureau of Mines figures. For the



W. H. Morgan, Chairman Calif. Heavy Crude Oil Committee.

first seven months of 1942, gasoline production averaged 222,000 barrels per day; for the like period of 1941, the average was 227,000 barrels per day. This reduction in gasoline yield occurred in the face of an increased daily crude production average, which was 641,000 barrels per day in 1942 against 621,000 daily in 1941.

In addition to reduction of refinery yields as a factor in the reduction of gasoline production, allocation schedules since the first of the year have consistently allotted greater and greater percentages of the state's total quota to fields producing fuel oil yielding crudes, with consequent restrictions on high gravity fields. As was pointed out in an article in the last issue of the California Oil World, the September schedule removed all restrictions from pools producing crude with a 70 percent or greater fuel oil yield, and restricted fields yielding 55 per cent to 70 per cent fuel oil only to their maximum efficient rates, with correspondingly decreased allocations to fields as their fuel oil yields decreased.

This method of allocation, the so-called "products basis," has been made necessary by increasing demands for fuel oil during a period when demand for gasoline was decreasing. As an indication of the impact of war on fuel oil demand, the Bureau of Mines reports that for the first seven months of 1942 consumption of this product was 343,000 barrels daily, an increase of 64,000 daily over the demand of 279,000 during the like period of 1941.

Possibilities for the future, under gasoline rationing, are that gasoline yields may be further reduced, not only to reduce production of gasoline but also to increase production of fuel oil for which the demand is expected to increase still further; increases in military consumption of gasoline which will in part, at least, offset decreased civilian consumption; relaxation of rationings as synthetic rubber becomes available; and a relatively larger gasoline "allowance" for the California motorist, since all authorities are agreed that the public transportation systems in the state are by no means adequate to serve such communities as Los Angeles, which has grown on a horizontal rather than a vertical plane.

These possibilities do not minimize the fact that there may well be an accumulation of gasoline in storage before the trends indicated are actually established, nor do they take into account the economic consequences of deliberately reduced gasoline yields. Refiners who produce more fuel oil, a low priced product, at the expense of gasoline, a high priced product, obviously will suffer a lower dollar-return from refining operations, which may require recognition by the Office of Price Administration or some other agency of the government, such as the Defense Finance Corp.

Crude Oil Prices

The OPA has recently been asked to recognize another price problem in California: the inability of the industry to drill for and produce greater amounts of low gravity crude under current price schedules, with the filing of a schedule of increased prices for California heavy crude by the California Heavy Crude Oil Committee. The schedule establishes a minimum price of approximately 93 cents per barrel for fuel oil yielding California crudes, with an average increase of approximately 22 cents per barrel on crudes of 15 gravity.

"The schedule is supported by a petition which thoroughly explores the California heavy crude oil situation, and is based solely on the need for additional heavy crude production", according to W. H. Morgan, vice-president of R. R. Bush Oil Co. and chairman of the committee which prepared the schedule and the petition.

The petition for an adjustment of prices to the levels requested shows that cost of developing new heavy crude oil production in the state would average 75.1 cents per barrel, while the present weighted average selling price for the same oil is 71.7 cents per barrel. Resultant average loss is 3.4 cents per barrel.

"These figures come from Government sources," Mr. Morgan said. "The amount of oil to be produced, and the number of wells needed to product it, were taken from a recent survey by the District No. 5 Office of the Petroleum Coordinator, while production cost figures were taken from a report of the U. S. Tariff Commission.

Development cost figures were compiled from current drilling costs in the fields indicated."

Costs set forth in the survey are based upon operating costs up to the end of the third quarter of 1941, the date of the Tariff Commission survey, and do not reflect increases in prices of materials, in wages, and in services since that time. They do not include interest on the investment, which, if considered, adds an average cost of 7.4 cents per barrel, bringing the total loss per barrel of oil to be produced under the proposed development program to 10.8 cents per barrel.

The proposed price schedule would increase the price of 15 gravity oil by an average of 22 cents per barrel, with progressively lower increases as gravities increase. It is based upon current price schedules, thus maintaining present differentials between fields. It does not propose any increase in the price of higher gravity oils.

Present prices for heavy crudes range from 69 to approximately 85 cents per barrel; under the proposed schedule, lower price brackets would be increased to approximately 93 cents per barrel, remaining at that level as gravities increased until the price thus determined reached the level of current price postings. For example, in a field in which present prices are 71 cents per barrel for 15 gravity crude, increasing to 94 cents per barrel for 21 gravity crude, the proposed price is 93 cents per barrel for 15 gravity crude, remaining at that level through 20 gravity crude, present prices to be retained for crudes of 21 gravity and higher.

"The proposed schedule would, on the average, result in a possible profit of 11.2 cents per barrel on the oil to be developed under the proposed drilling program. However, this profit is calculated on the assumption that all of the 685 wells proposed in the Office of Petroleum Coordinator survey will be successful, which is doubtful. If any of them should fail to produce, the average cost of successful wells would be increased. The profit indicated, therefore, seems to the committee to be no more than a reasonable insurance against the hazards associated with oil drilling", Mr. Morgan said.

Supply of Equipment

Involved in the problem of developing additional supplies of heavy crude is the problem of availability of equipment. California operators who attend the monthly Petroleum Industry War Council meetings in Washington and are familiar with the present policy of the War Production Board with respect to steel allocations, are generally of the opinion that no new steel will be allocated to the oil industry until all steel now in the hands of the industry has been used up. This policy obviously governs the form and date of issuance of a revised M-68, which apparently will not be issued until the WPB has data at hand to enable it to judge how much steel can be "found" in the hands of the industry, and how much additional will then be needed.

Because of this policy, a survey of pumping equipment—new, used, and makeshift—in the hands of California operators assumes considerable importance. As is stated in a letter signed by Paul Huggins, chairman of the Conservation Committee, which is gathering data to be compiled by the District No. 5 Office of the Petroleum Coordinator, "Before practical adjustments can be made in the provisions of Conservation Order M-68 for the purpose of adapting the order to the requirements of production operations in the oil fields of California, a comprehensive factual study must be completed, which will serve as a basis for the determination of such specific and practical adjustments.

"The need for such an amendment to Order M-68 is urgent and vital, not only to implement the entire West Coast oil industry in the job of effectively advancing the war effort but also to provide a much

needed tool for the more efficient conduct of the production operations of each individual operator. With this thought in mind, each operator is urged to give this project his vigorous attention as a matter of primary importance to himself, to the industry and to the nation."

In a questionnaire which accompanied the letter, the operator was asked to list the number of wells idle because of (a) restrictions in M-68; (b) other limiting government orders; (c) material shortages; (d) economic reasons; (e) lack of outlet. He then was asked to list, out of these wells, the ones which could be equipped with his own material from (a) warehouse inventory; (b) idle equipped wells in the same pool; (c) makeshift equipment; (d) equipment transferred from other pools. Accompanying these listings, the operator was to estimate the number of barrels of production invoved, so that an estimate as to the resultant oil production could be prepared. A subtraction of the number of wells that could be equipped with material on hand, from the total number of producible idle wells would give an estimate of the new material needed to complete the equipping of all producible wells in the state. The survey did not contemplate securing any information as to drilling wells not heretofore on production, nor on any wells scheduled to be drilled.

Operators were asked to return the questionnaires to the Conservation Committee by the beginning of the third week of September, when data would be compiled and forwarded to the OPC in Washington to be used as a basis for formulating a policy of exceptions to M-68 to apply to California fields.

Materials Committees

Also bearing on the subject of oil industry materials, the Petroleum Industry War Council adopted a resolution at its September meeting which recommended that Oil Coordinator "create immediately in each of the five Coordinator's Districts a committee on materials and supplies, the membership of which will be recommended by the general chairman of each district."

Further points in the same resolution were that "the several committees acting in their respective districts take steps to bring about, through industry cooperation, equitable distribution of such materials as may now exist", "that the several committees . . . submit . . . estimates of the future materials requirements, so that the Office of Petroleum Coordinator for War and the War Production Board may properly adjust the flow of material from manufacturing sources," and "that the committees be directed to survey and inventory in their respective districts all tonnage and significant materials at the earliest possible date."

This resolution was adopted after the council had discussed a modified "Huff" plan, (Wm. Huff, formerly a California oil well supply man, now in the OPC as a materials specialist. His original plan had contemplated the inventorying of most items of equipment used by oil companies, and was objected to on the grounds that it was too detailed and involved to be of value) which was recommended by the Council's production committee.

P-98B Issued

A new schedule of priority ratings for oil industry materials has been established with the issuance of Priorities Regulation P-98B to supersede P-98, which expired on September 15.

The new schedule grants higher ratings than were established under P-98 for materials needed as maintenance and operating supplies; such materials now bearing A-1-A and A-2 ratings. In general, priority ratings set up under P-98B are:

A-1-A and A-2 for all materials and equipment required as maintenance and repair items and operating supplies; with the following provisions:

A-1-A application for materials costing more than $500 must be filed with OPC and approved by WPB; a similar application for materials costing less than $500, requires only the signature of the appropriate district OPC as does an A-2 application for materials costing more than $500.

A-2 applications for less than $500 require no countersignature and can be made direct to the manufacturer.

If an assigned rating proves insufficiently high, the operator can apply to OPC for a higher rating, in which case he uses the PD-1-A form, and in urgent cases of breakdowns, OPC will respond to written or wired requests for ratings high enough to secure immediate delivery of needed repair parts.

P-98B is not used for new construction materials, except in the production branch of the industry.

The order states that "no operator may apply any preference rating assigned by this order to obtain delivery of material unless the material cannot otherwise be obtained on the date when such material is required, and no operator may apply the A-1-A preference rating . . . in any case where the A-2 preference rating . . . will enable such operator to secure the material on the date when such material is required.

"No operator may apply a rating . . . to obtain material the use of which may be eliminated by substitution of less scarce material or by change of design without serious loss of efficiency.

"No operator may apply a rating . . . to obtain material in excess of a 90-day supply thereof, provided: that the director general for operations may determine and direct that any operator or class of operators is exempt, in whole or in part, from the restrictions contained in this paragraph."

The order will remain in effect until January 1, 1943.

Authority for Ickes

There is considerable discussion in the industry as to the advisability of granting additional authority to Coordinator Ickes. This discussion has occupied the Petroleum Industry War Council, has become the subject of several bills introduced into both branches of Congress, and

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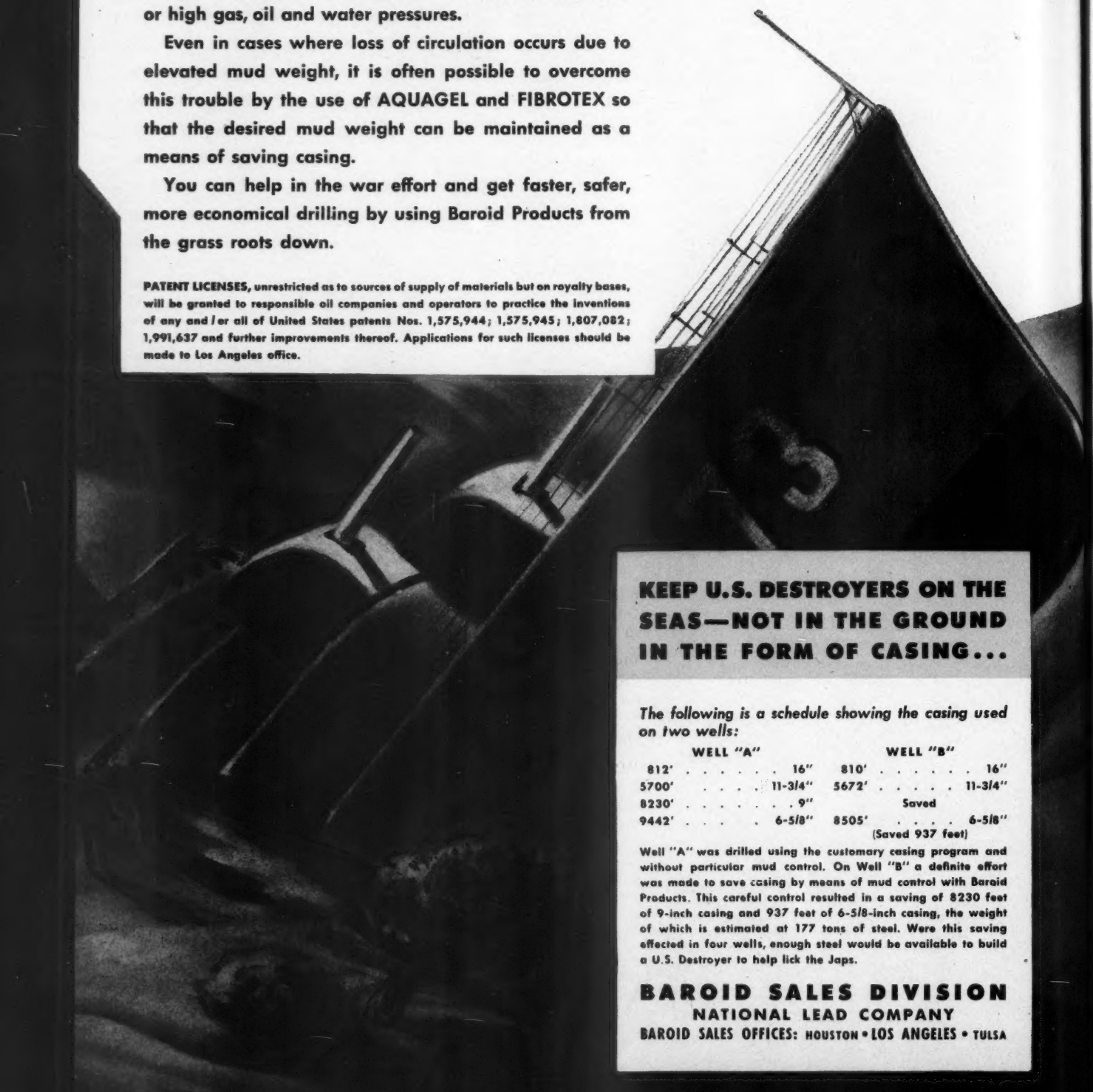
PATENT LICENSES, unrestricted as to sources of supply of materials but on royalty bases, will be granted to responsible oil companies and operators to practice the inventions of any and/or all of United States patents Nos. 1,575,944; 1,575,945; 1,807,082; 1,991,637 and further improvements thereof. Applications for such licenses should be made to Los Angeles office.



KEEP U.S. DESTROYERS ON THE SEAS—NOT IN THE GROUND IN THE FORM OF CASING...

The following is a schedule showing the casing used on two wells:

WELL "A"		WELL "B"	
812'	16"	810'	16"
5700'	11-3/4"	5672'	11-3/4"
8230'	9"		Saved
9442'	6-5/8"	8505'	6-5/8" (Saved 937 feet)

Well "A" was drilled using the customary casing program and without particular mud control. On Well "B" a definite effort was made to save casing by means of mud control with Baroid Products. This careful control resulted in a saving of 8230 feet of 9-inch casing and 937 feet of 6-5/8-inch casing, the weight of which is estimated at 177 tons of steel. Were this saving effected in four wells, enough steel would be available to build a U.S. Destroyer to help lick the Japs.

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has been referred to by Coordinator Ickes himself, in a press conference and before a congressional committee.

In testifying before a House Committee investigating petroleum and synthetic rubber, Coordinator Ickes repeated his belief that Federal supersvision over all phases of the oil industry should be lodged in one man, and in a recent press conference, he said "I have never been an advocate of shotgun administration; if there is a job to be done, it ought to be done by one man. I am not saying who that one man ought to be, of course."

The statement was in reply to a question as to the need for centralized control of the oil industry during war time. Further questioning developed the fact that Coordinator Ickes did not know when such centralized control might be established, although the proposal has been made to the President.

Those who favor giving the Coordinator more authority point to the fact that the innumerable agencies which now exercise some degree of control over the oil industry lead to confusion, and that none of them have the understanding of the oil industry's problems which the specialized staff of the OPC has. Some of the agencies with which the industry now deals in Washington, and under whose authority it lies in one or another phase, are: Office of Price Administration, Office of Defense Transportation, Defense Plant Corp., Reconstruction Finance Corp., War Production Board, and others too numerous to mention.

A recent regulation of the Office of Defense Transportation, which has authority over transportation of all kinds, requires that truckers obtain "certificates of necessity" for permission to obtain gasoline, repair parts, and other supplies needed to keep the trucks on the highways. Purpose of the order is to eliminate unnecessary hauling and use of trucks, thereby saving rubber, but its effect on the oil industry, and its application to industry tank trucks is not known as yet. Other regulations of the ODT, particularly the ones which required that trucks be loaded to capacity on one way of a trip and at least 75 per cent loaded on the return trip, caused considerable confusion until they were modified, but in this case, tank trucks were specifically exempt.

Depletion Allowance

The Treasury has again been defeated by Congress—both in the Senate and in the House—in its attempt to eliminate the percentage depletion allowance from the tax bill. As the bill passed the House, the depletion allowance was retained, and the Senate Committee on Finance has refused to hear the Treasury's plea that the allowance be amended out of the bill by the Senate. It appears that the allowance will be retained, therefore, although it would be possible for the Treasury to win its battle on the floor of the Senate.

Petroleum Engineers of Southern California to Hold Technical Meeting in October

Featuring the study of modern recovery methods and factors affecting the efficient production of oil and gas, the Petroleum Division of the American Institute of Mining and Metallurgical Engineers, Southern California Section, will hold its annual two-day session at the Ambassador Hotel, Los Angeles, October 15th and 16th.

Lt. Commander Harry P. Stolz, chairman of the national Petroleum Division of the Institute, will call the meeting together for its program of technical papers in the Ambassador theatre beginning the afternoon of Thursday, October 15th.

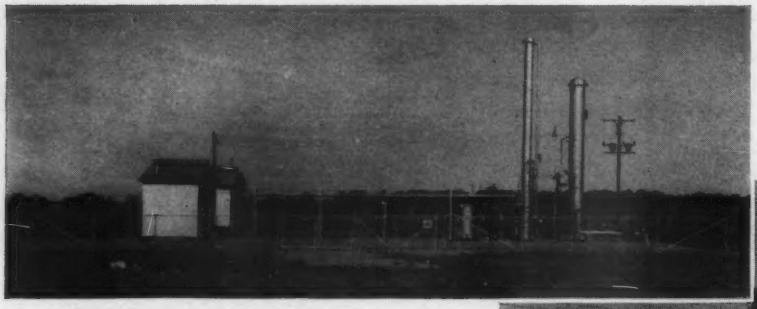
"It is clear," says Lt. Commander Stolz, "that the oil industry has stepped forward admirably to assume the great responsibilities brought by the war, and this can be traced to the concerted work of individuals within the industry. To the extent that this is a technical war and largely a battle for oil at present, each petroleum engineer and geologist owes it to the community to devote his best talents and efforts toward getting the oil above ground and to the bases where it is needed. The Pacific theatre of war makes the California operators particularly aware of these responsibilities. Gasoline, butadienes for rubber, lubricating oils, fuel oils, all are absolute necessities. Our meeting in Los Angeles will be directed toward the latest technical procedures and practices for increasing recovery and gaining the most from our reserves of oil and natural gas."

The program of papers and discussions to be presented by engineers of the Petroleum Division in the Ambassador theatre will be open to the public. For the evening of Friday, October 16th, a dinner for members of the Institute has been arranged at the hotel by C. P. Watson, Chairman of the Southern California Section of A.I.M.E., where the local Section will be hosts to the Petroleum Engineering Division. At the dinner, a prominent oil executive will address the members on a subject to be announced later. According to Leigh Battson and George Nilsson, in charge of arrangements, a brief appropriate entertainment is scheduled to follow the dinner.

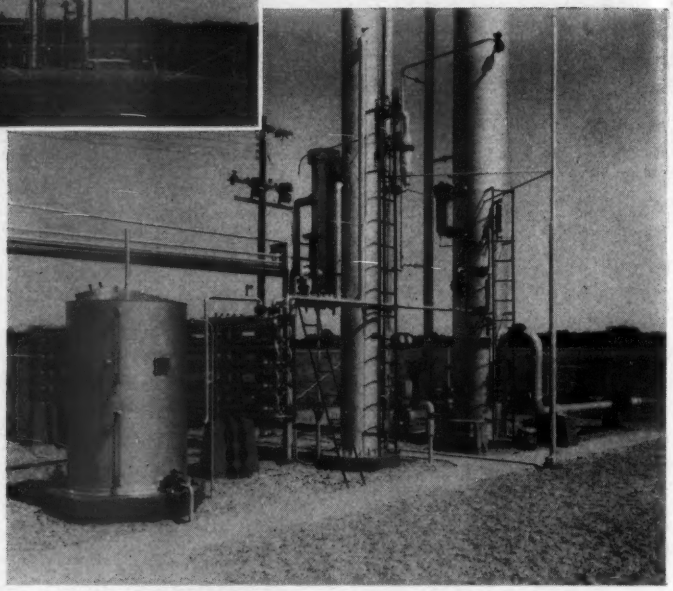
The program of technical papers has been drawn up by E. G. Trostel, assisted by Lawrence E. (Larry) Porter, Howard C. Pyle, Prof. John F. Dodge, John E. Sherborne, James T. Carriell, Robert B. Moran, Ralph M. Marshall, H. K. Armstrong, Charles R. Dodson, Harold T. Wyatt, and Lt. Commander V. H. (Vic) Wilhelm.

Howard Pyle and Charles R. Dodson will preside as chairman over the Thursday afternoon session, following the opening talk by Lt. Commander Stolz. The program of Friday morning will be sponsored by junior engineer members of the Institute, and will be presided over by John Sherborne and James T. Carriell, Chairman of the Junior Members. The closing afternoon session may be directed toward the economics of modern recovery methods.

GAS DEHYDRATION PLANTS



Dehydration Plant to process 60 MM cu. ft. gas/day, lowering dew point of the gas 45 deg.



Contactor, Still, Heat Exchangers, and Glycol Storage Tank with Control Arrangement for automatic operation.

3 Gas Dehydration Plants just completed for the United Gas Pipe Line Company in Texas and Louisiana

These installations dehydrate gas going to New Orleans, Mobile, and Wichita Falls areas.

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- *Gas Dehydration Plants*
- *Compressor Stations*
- *Natural Gasoline Plants*
- *Stabilization Plants*

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Design of Gasoline Plants for High Propane Recovery

By Henry N. Wade, Parkhill-Wade
Delivered before C.N.G.A. Meeting, Rio Hondo Golf Club, Sept. 3, 1942

The attitude of many gasoline plant operators toward the recovery of propane has been exactly reversed during the past few years. As recently as five or six years ago in most gasoline plants the extraction of propane along with the desirable components was considered a necessary evil, and plants were generally designed to eliminate the propane from the fat oil stream as far as possible before starting distillation. In most plants the possibilities of marketing butane and propane as separate products, or as a mixture, were fully met by the excess of these materials naturally made available by efficient extraction of the pentanes and heavier fractions.

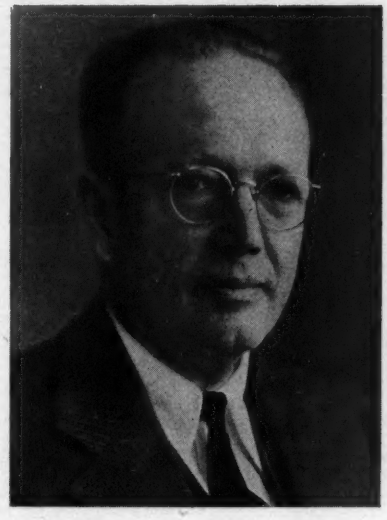
The recent development of uses for the butanes as base materials for chemical conversion into high-octane motor gasoline and various synthetic products, including rubber, has transferred to propane a good deal of the market demand for liquefied petroleum gas formerly met by butane.

Further than this, new chemical conversion processes make use of propane itself as a starting point for building up various synthetic compounds.

These changes in the economic position of propane have led to some revisions of ideas about gasoline plant design in order to accomplish a maximum propane recovery.

The usual basic schemes of gasoline plant design may, of course, be applied to plants intended for high propane recovery. However, on account of the nature of most natural gases, the oil absorption process ordinarily is the only feasible one which is capable of giving really high propane recovery. Due to the high percentage of methane and ethane in average gases, compression and cooling, with or without refrigeration, cannot give a high yield of propane except when dealing with freak sources of gas. Similarly, the so-called "vapor rectification" scheme of extraction, where the whole gas is fed under high pressure into a fractionating column which generates its own reflux, will be wasteful of propane unless the percentage of methane and ethane in the raw gas is quite small; say something of the order of 20% by volume.

The general problem of securing higher recovery of propane by absorption is divided into two distinct operations; first, the primary extraction of the propane from the wet gas, and second, the retention of the propane in the weathering and distillation or fractionating system, while removing the ethane and lighter fractions to the greatest possible degree.



Henry N. Wade

The first of these operations, the primary absorption, depends in the usual way on the factors of oil-gas ratio, quality of oil, and absorption temperature and pressure. These factors are capable of adjustment to suit any particular set of conditions, in line with well-known practice. Very often the absorption pressure is fixed by factors outside of the control of the gasoline plant operator. With this pressure fixed, the efficiency of primary absorption may be increased either by increasing oil circulation or by lowering the absorption temperature.

Experience with the design for high propane recovery of plants operating over a wide range of absorber pressures has shown that in general it is economical to lower the absorption temperature for low pressure plants, and to increase oil circulation for high-pressure plants. An indication of why this is so may be gathered by reference to Fig. No. 1. This table presents the "K" factors for propane, butanes and pentanes at various absorber temperatures and pressures, taking 90° F. as fairly representative absorber temperature in an average plant. The table also shows the comparison between the "K" factors at this temperature and several other temperatures. A casual inspection of the table shows clearly that the gain in absorption efficiency, represented by a decrease in the value of the "K" factor, is much less pronounced with declining temperatures when the absorption pressure is high than when it is low.

Obviously the point at which it will pay to use sub-cooling by means of refrigeration in order to gain high propane recovery efficiency will depend on a great many factors, such as composition of the gas, size of the plant, prevailing atmospheric cooling conditions, required efficiency of propane recovery, etc. The use of artificially low absorber temperatures is generally restricted to comparatively low pressures on account of the rise of hydrate formation temperature with pressure. Thus, at pressures around 500 lbs., with average gas the hydrate formation temperature is about 52°; at 1000 lbs. it is about 63°, and it is

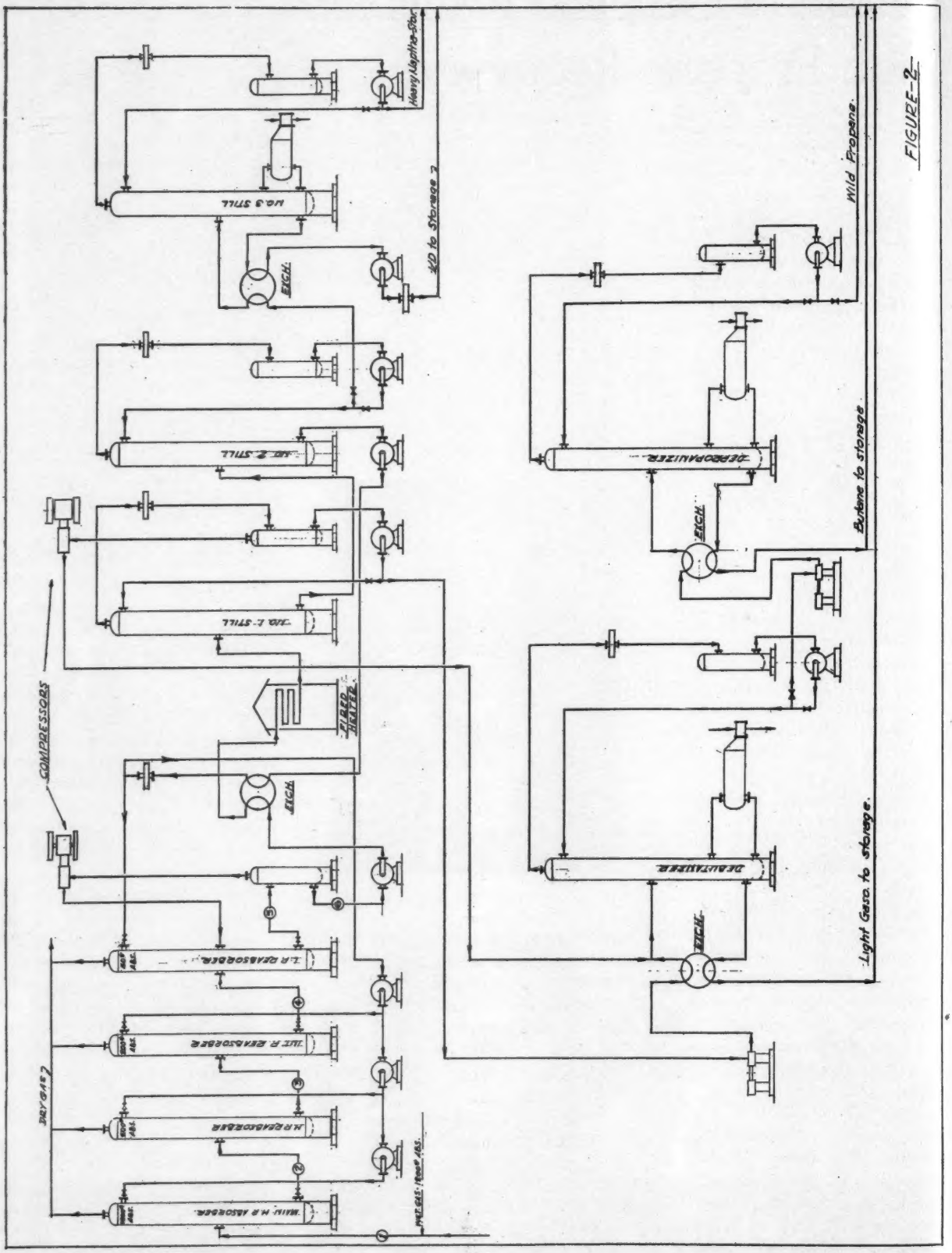

Heavy Naptha-Stor.
#2 to Storage 2
NO. 3 STILL
EXCH.
NO. 2 STILL
NO. 1 STILL
SURGE DRUM
COMPRESSORS
EXCH.
L.R. ADSORBER
INT. R. ADSORBER
H.R. ADSORBER
MAIN H.R. ADSORBER
DRY GAS
Wild Propane.
DEPROPANIZER
EXCH.
Butane to storage.
DEBUTANIZER
EXCH.
Light Gaso. to storage.

FIGURE-2-

78° at 2000 lbs. These figures show that not much can be done in the way of artificial cooling at pressures above 1000 lbs. without requiring dehydration of the wet gas. The plant addition required for such dehydration will usually out-balance the cost of accomplishing an equal recovery by other means.

Our own experience with estimating plant schemes where refrigeration of absorber oil and/or gas was balanced against increased oil circulation to accomplish an equal recovery of propane has indicated that refrigeration will give a cheaper plant for absorber pressures up to possibly 400 lbs. per sq. in., and that refrigeration is more expensive than increased oil circulation for absorber pressures in excess of 1000 lbs. per sq. in. In between these limits the decision will depend on factors which must be studied and worked out for each individual case.

Turning to the second operation involved in high propane recovery, that is, retention of the propane in the fat oil stream after the primary extraction from the wet gas, an almost infinite number of possible schemes can be used. The problem is, of course, to remove as completely as possible the methane and ethane from the fat oil stream while suffering a minimum loss of propane and heavier components.

One scheme for accomplishing this, which has been successfully used in a number of high-pressure plants, is illustrated in flow sheet form in Fig. No. 2. The plant represented by this flow sheet was designed to handle a total of 120,000,000 standard cu. ft. of gas per twenty-four hours in one of the high-pressure distillate-type fields near Corpus Christi, Texas. The main absorber operating pressure is fixed by field conditions at 1200 lbs. per sq. in.

The fat oil leaving the base of the main absorbers passes first to the base of the reabsorber operating at 600 lbs. per sq. in. absolute. The release of pressure on the fat oil stream frees nearly 50% of the dissolved methane, and smaller amounts of the ethane, propane and butanes. Sufficient fresh lean oil is passed over the plates of the reabsorber to control the loss of propane and heavier components within the permissable figure.

VARIATION OF CRITICAL "K" FACTORS WITH TEMPERATURE AND PRESSURE

TEMP. °F.	ABSOLUTE PRESSURE, LBS. PER SQ. IN. 50 K	50 K/K 90°	100 K	100 K/K 90°	500 K	500 K/K 90°	1000 K	1000 K/K 90°	1500 K	1500 K/K 90°	2000 K	2000 K/K 90°
					PROPANE							
30	1.37	141%	.72	146%	.214	149%	.195	56%	.224	61%	.278	68%
50	1.85	99	.97	99	.278	64	.242	69	.272	74	.320	79
70	2.15	78	1.28	78	.352	81	.293	84	.321	87	.363	89
90	3.13	100	1.63	100	.435	100	.350	100	.370	100	.407	100
110	3.9	125	2.02	124	.530	122	.410	117	.420	113	.450	110
					BUTANES ••							
30	.405	37%	.212	38%	.070	42%	.074	49%	.097	55%	.134	63%
50	.580	53	.303	54	.096	58	.097	64	.121	68	.159	75
70	.810	74	.420	75	.128	77	.122	81	.148	83	.184	87
90	1.09	100	.562	100	.166	100	.151	100	.178	100	.211	100
110	1.42	130	.735	131	.210	126	.183	121	.210	118	.240	114
					PENTANES •••							
30	.10	30%	.052	31%	.020	34%	.026	43%	.040	51%	.063	59%
50	.157	47	.083	48	.030	52	.035	58	.051	65	.076	71
70	.233	70	.122	71	.042	72	.046	77	.064	81	.093	85
90	.332	100	.173	100	.058	100	.060	100	.079	100	.107	100
110	.460	139	.240	139	.077	133	.076	127	.095	120	.125	117

* Taken from charts of light crude oil equilibrium factors published by D. L. Katz, University of Michigan.

•• 20% isobutane, 80% normal butane in liquid phase.

••• 35% isopentane, 65% normal pentane in liquid phase.

Underlined figures represent operating conditions subject to freezing or hydrate formation.

Fig. #1

The combined stream of fat oil from the base of the 600 lb. reabsorber is then passed to the intermediate pressure reabsorber operating at 200 lbs. absolute, where the vented gas is again treated with a stream of fresh absorber oil.

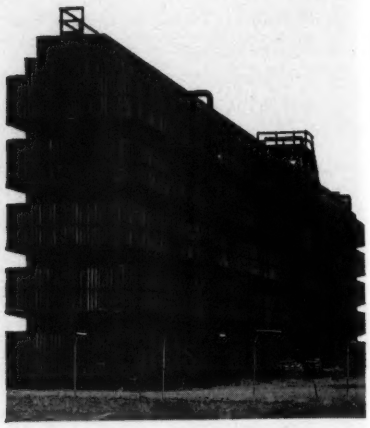
The fat oil from the base of the intermediate reabsorber is then passed to the base of the low-pressure reabsorber operating at 50 lbs. absolute, and the vented gas is absorbed with another stream of fresh reabsorber oil.

In order to retain the maximum amount of propane, it is, of course, necessary to reduce the amount of methane and ethane enough to permit total condensation of overhead vapors in the depropanizer column, thus avoiding any loss of propane from the materials in the fat oil stream after leaving the last venting stage. In the case of the plant under discussion, this requirement made it necessary to put the absorber oil through one more stage of venting, at 16 lbs. absolute or about 1 lb. gauge. Instead of attempting to efficiently extract the propane and heavier from the vented gases in this stage at this pressure, it proved to be more economical to compress these gases and introduce them into the base of the low-pressure reabsorber. By this four-stage system of venting, it was possible to so reduce the methane and ethane distilled out of the fat oil as to allow total condensation in the depropanizer column reflux condenser without operating it at an abnormal pressure.

The rest of the flow sheet is conventional except that three stills are provided to permit making three separate primary products; namely, wild light gasoline containing all the propane and butanes, heavy naphtha and kerosene.

In the lower part of the diagram, the raw light gasoline plus the recompressed vapors from the No. 1 still condensate accumulator are

How Specifying Atmospheric Cooling Towers Speeds War Production



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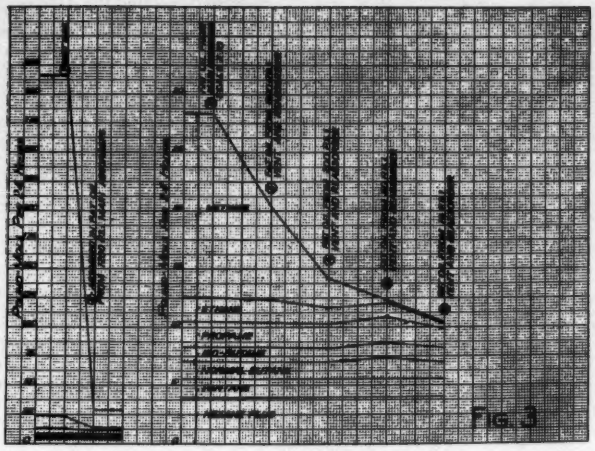


fractionated into debutanized light gasoline, mixed butanes, and wild liquid propane containing some methane and ethane.

Fig. No. 3 shows in graphical form the results accomplished by the above absorption and weathering system. The column of figures at the left of the graph shows the composition of the wet gas entering the base of the absorber. Actually, a considerable amount of heavy distillate is condensed in the gas before it enters the absorber. The composition shown includes this condensed material along with the vapor phase components. The actual quantities entering the plant are one thousand times as great as those indicated on the graph scales.

The effect of the primary absorption is shown in the left-hand part of the graph. In this absorption about 5% of the methane is dissolved in the absorber oil, 22% of the ethane, 51% of the propane, 86% of the isobutane, 97% of the normal butane and 100% of the pentanes and heavier. This part of the graph shows clearly the highly selective nature of the absorption process. Almost 100% of the isobutane and heavier is captured in the absorber oil, while only a very small part of the methane and ethane is held.

The right-hand part of the graph is drawn to a scale ten times as large as the primary absorption, in order to show more clearly the changes which occur during the four-stage weathering process just described.

Of the materials dissolved in the oil by the primary extraction, the following approximate percentages remain in the combined fat oil leaving the base of the 600 lb. reabsorbent.

Component	Percentage of Original Extraction Remaining
Methane	53.0%
Ethane	87.0%
Propane	97.0%
I-Butane	99.5%
N-Butane	99.8%
Pentanes+	100.0%

Similar reductions in the lighter components continue through the remaining three weathering stages as shown on the graph. In the final result, the fat oil entering the distillation system shows the following relative amounts of dissolved materials compared with those same materials in the fat oil stream leaving the base of the primary absorbers:

Component	Percentage of Original Extraction Remaining
Methane	0.38%
Ethane	22. 7%
Propane	75. 6%
I-Butane	98. 0%
N-Butane	99. 5%
Pentanes+	100. 0%

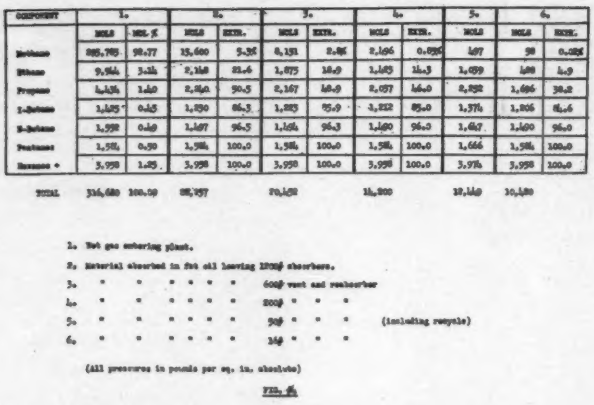
The increase in the quantity of dissolved materials indicated at Station (5) "Fat Oil From 50 lb. Vent and Reabsorber" shows the effect of recycling the gas vented at 16 lbs. absolute pressure and returned by compression to the 50 lb. reabsorber. The effect of this recycle, of course, disappears in the oil leaving the 16 lb. absolute vent, so that here all components down to normal butane show a decline as compared with the quantities leaving the 200 lb. vent.

In another large plant designed about three years ago to process 80,000,000 standard cu. ft. per day of gas at 70 lbs. gauge pressure, the relative costs of high oil circulation without refrigeration and a lower circulation with refrigeration were carefully compared. In this case the objective was to extract and save not less than 65% of the total butanes in the wet gas, and along with it to save as much propane as possible without increasing the oil circulation for propane extraction alone.

By reducing the temperature of the lean oil stream over the main absorbers from 90° F. (available with ordinary cooling) to 59° F. by means of refrigeration, the required oil circulation was reduced from about 1500 gallons per minute to about 950 gallons per minute. The saving in cooling, pumps, heat exchange, vessel sizes, and boiler capacity resulting from this reduction in lean oil circulation off-set the cost of the refrigeration equipment, and in addition saved nearly $50,000 in the overall cost of the plant.

Miscellaneous Design Notes:

The selection of the number of plates to be used in absorbers for high propane recovery will be determined by the usual considerations. If a primary extraction of 80% of propane is required, the difference between 8 theoretical plates and 12 theoretical plates, corresponding approximately to 16 and 24 actual plates, will reduce the oil circulation by about 3.5%, all other conditions remaining equal. However, if the required primary extraction is 98%, the 16 plate absorber will require about 17.5% more oil



COMPONENT	1.		2.		3.		4.		5.	6.	
	MOLS	MOL. %	MOLS	EXTR.	MOLS	EXTR.	MOLS	EXTR.	MOLS	MOLS	EXTR.
Methane	295,785	92.77	15,600	5.36	8,131	2.85	2,196	0.835	497	98	0.525
Ethane	9,964	3.14	2,168	21.6	1,875	18.9	1,183	11.3	1,059	488	4.9
Propane	4,434	1.40	2,840	50.5	2,167	48.9	2,057	46.0	2,852	1,696	38.2
i-Butane	1,585	0.45	1,330	84.3	1,283	85.9	1,222	85.0	1,376	1,205	84.6
n-Butane	1,992	0.49	1,487	96.5	1,464	96.3	1,480	96.0	1,647	1,400	96.0
Pentanes	1,584	0.50	1,584	100.0	1,584	100.0	1,584	100.0	1,666	1,584	100.0
Hexanes +	3,958	1.25	3,958	100.0	3,958	100.0	3,958	100.0	3,958	3,958	100.0
TOTAL	316,680	100.00	88,757		70,452		14,200		12,149	10,180	

1. Wet gas entering plant.
2. Material absorbed in fat oil leaving 1200# absorbers.
3. " " " " " " 600# vent and reabsorber
4. " " " " " " 200# " " "
5. " " " " " " 90# " " " (including recycle)
6. " " " " " " 14# " " "

(All pressures in pounds per sq. in. absolute)

FIG. 6.

than the 24 plate absorber. In this latter case the additional investment in absorber plates would certainly be justified, while in the former case the investment might or might not be justified, depending upon the size of the plant and the richness of the gas.

Our own experience with refrigeration cycles has led us to prefer systems using refrigerants such as ammonia which do not mix with lubricating oils, rather than those systems which use propane or butane, or mixtures of propane or butane. In the first place it is difficult to maintain proper compressor cylinder lubrication when the lubricating oil is continually diluted and washed away by condensation and solution of the vapors in the oil. Further than this, it is impossible to remove completely the compressor cylinder lubricating oil from the compressed vapors on their way to the vapor condenser. The lubricating oil therefore is carried on and accumulates in the chiller or evaporator, where it deposits on the heat transfer surfaces, forming a slimy insulating coating on account of the low temperature.

Refrigeration by direct evaporation of water at low absolute pressures has been used for cooling oil and gas below the levels attainable by ordinary atmospheric cooling towers. In these systems water is evaporated by reducing the pressure on it to around 0.1 lbs. per sq. in. absolute, thus cooling the water to temperatures approaching 40° F. Compression of the steam evaporated from the water at this low pressure and temperature is accomplished by means of a steam jet ejector. This scheme can be used successfully in peculiar situations where large amounts of medium and low pressure steam are available without appreciable cost. In general, when the designer is free to choose his course without consideration of existing facilities, such installations are expensive compared with mechanical refrigeration.

Retain Intangible Development Option

The Senate Finance Committee on September 11 voted 12 to 6 to retain the present provision in the revenue bill which allows the optional expensing of intangible development costs. The Treasury Department proposed to make it mandatory that these costs be capitalized.

Engineering, Technology, latest news—twice a month in California Oil World.

Production Code Delayed

Issuance of the revised Priorities Regulation No. 10 is now rumored to be indefinitely delayed, with the possibility that it may not become effective at all. This is the regulation which would establish a "production code" calling for code letters and symbols on purchase orders in order to determine the "end use" of products. Meanwhile the original "allocation classification" officially continues in effect.

Gasoline Men Consider Fractionation Problems

With a program specially arranged for natural gasoline plant operators, the California Natural Gasoline Association will hold its regular monthly meeting Thursday evening, October 1st, at the Rio Hondo Golf Club according to W. W. Robinson, Jr., president.

The program will present a new type feature titled "Information, Please on Fractionator Operations." This will not be a previously prepared technical paper but instead will be a panel type discussion of the technical problems involved in the operation of fractionating columns. P. S. Magruder of General Petroleum Corporation will preside over a board of experts consisting of H. J. Maxwell, Standard Oil Company of California, C. D. Gard, Union Oil Company of California, W. N. Roper, Western States Gasoline Corporation, F. D. Parker, Bechtel-McCone-Parsons Corporation, J. B. Taylor, Signal Oil & Gas Company, and Clarence Gotterba, Richfield Oil Corporation. Plant operators, in attendance, will submit questions from the floor on column operating problems and these will be referred to the board for answers. As an entertainment feature, a color motion picture titled "Scientific Aspects of Trout Fishing will be shown. The Association's regular monthly dinner will precede the program.

Oil Compact To Meet In Chicago

Interstate Oil Compact Commission will hold its next quarterly meeting at the Palmer House in Chicago, October 1 to 3. The Commission plans at this meeting to make a study of present and future utilization and conservation of natural gas. The program will include a look into the future of expanding pipeline facilities and industrial use, developments in the liquefied petroleum gas industry, Bureau of Mines research, technical developments in gas synthesis, gas utilization for synthetic products, and natural gas conservation.

Increasing Isobutane Production in Natural Gasoline Plants

By G. N. Hile, Technical Supervisor, Natural Gasoline Department, Standard Oil Company of California

It is frequently said that the present international situation places American industry on the firing line. In the case of the Natural Gasoline Industry, the objective has been very clearly indicated: Recover maximum additional isobutane with a minimum use of additional steel. To accomplish this, the principal points of attack open to the plant operator are the absorption system, the plant vapor cycle, and the rectification process. It is the purpose of this paper to review technical data available for the solution of this problem and to point out a few of the things that have already been done.

The absorption system is, of course, of prime importance in the extraction of isobutane. Through the use of the familiar Kremser formula[1], we are well equipped with the fundamental tools to handle this phase of the problem. The Kremser formula may be written in terms of readily available operating data as follows:

$$A = C_o \times \frac{O}{V} \times \frac{P}{cp}$$

where: A=Absorption factor

C_o=Absorption oil constant ($3.156 \times \frac{\text{Density}}{\text{Mol. Weight}}$)

O=Absorption oil circulation, Gals./Min.

V=Gas to absorber, MCF/day.

P=Absorber pressure, Lbs.abs.

c=Factor to convert vapor pressure to fugacity .[2]

p=Vapor pressure of the pure hydrocarbon at absorber base temperature.

In order to translate this formula directly into terms of actual per cent extraction, it is necessary to know the plate efficiency of the absorber and how to apply operating data. There is a considerable difference of and how to apply operating data. should be used in applying this formula. Unanswered questions are: Where should the temperature and pressure be taken, and should gas and oil measurements be made at the top or bottom of the absorber? These questions are the subject of current research study, and it is hoped we may expect an early answer. However, in the meantime, by arbitrarily selecting convenient points for taking the necessary data and correlating factors calculated from these data against the results of actual fractional analyses, it is possible to set up experimental curves which will permit full use of the formula with confidence. Figure 1 presents such a correlation. Curves are also presented (Fig. 2 and Fig. 3) which permit the ready determination of the oil constant (C_o) and the vapor pressure correction factor (c) which are required for the solution of the absorption factor formula.

By the application of this formula and correlation, the solution of absorption problems becomes one of straightforward mathematics. The use of these data is not, however, recommended for vapor reabsorber calculations where unusual volume and temperature changes occur both in respect to the absorption oil and in respect to the gas.

In working out the economics of contemplated changes to improve absorption factors by refrigeration, increased oil circulation, changes in pressure, or changes in oil quality, particular care must be given to the operating position on the absorption factor curves. It will be noted that the advantages to be gained are approximately proportional to increases in absorption factor up to about 90% extraction. Beyond this point, the curves flatten out and increased absorption becomes more difficult.

After absorption, the method of handling plant vapors is of utmost importance. The method or combination of methods which will be most effective depends upon the operating pressure of the plant, available equipment and plant capacity. For this reason, every plant becomes an individual problem. Where there is ample oil circulating capacity, plant vapors may be satisfactorily treated in a separate absorber, a reabsorber, or by recycle to the plant intake. This system alone has limited application as vapor loads become abnormally high, at the high

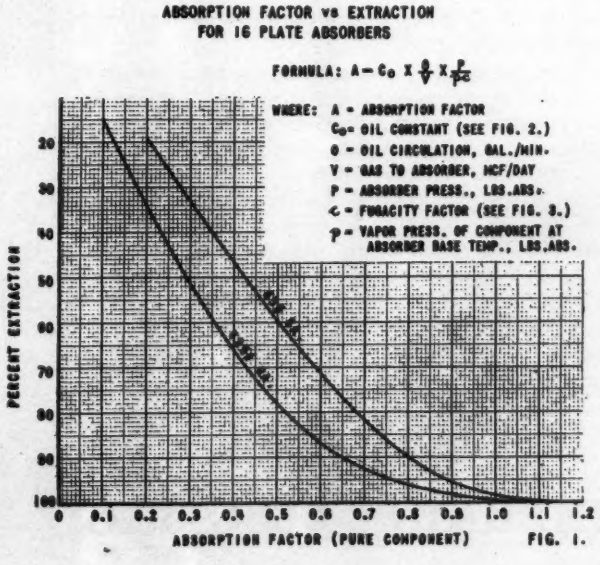
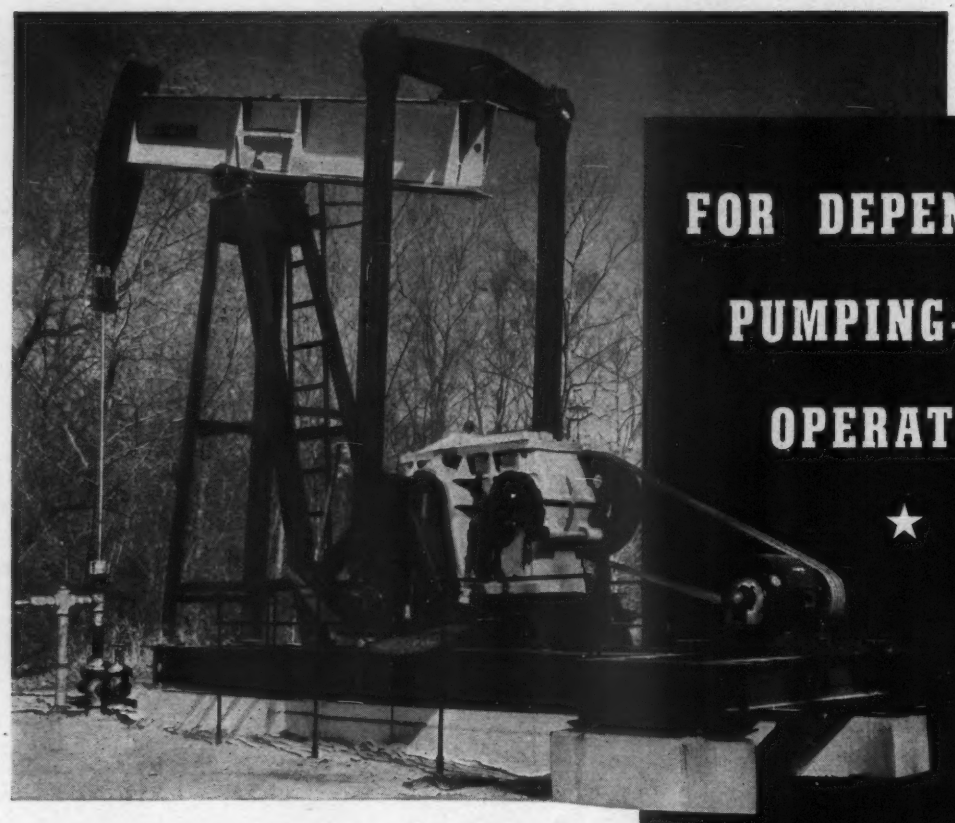


FIG. 1.



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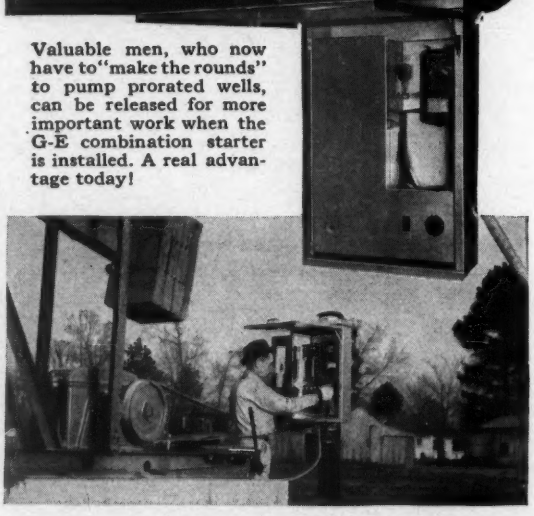

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absorption factors required, the distillation system must operate at a relatively high pressure, and vapor cooling must be good. This method of operation is further limited to those cases where all isobutane can be retained in the plant product at relatively low pressures, around 25# Reid. Where Reid vapor pressures for total isobutane retention run from 30# to 40#, the reabsorber system canot be expected to be effective.

Where oil circulating capacities are limited and compressors are available, vapors may be more advantageously handled by compression, followed by cooling and recycle absorption. The pressure at which a vapor recompressor cycle is most effective again depends to a large extent upon available oil capacity, available compressor capacity, and cooling conditions.

The capabilities of the vapor recompressor cycle to retain the isobutane absorbed is best illustrated by cycle calculations. Table I presents results of a series of such calculations wherein it is assumed that the oil capacity of a hypothetical plant is fixed at 350 gallons per minute. Other assumed conditions are:

Field Gas .....10,000 MCF/Day
Analysis of Field Gas:

		G/M
Methane	84.37%	
Ethane	7.58	
Propane	4.01	
Isobutane	0.77	0.25
N-butane	1.49	0.469
Isopentane (+)	1.78	0.71

Base Stock (Reid V.P.) 9.4#
Absorber Pressure .....65#/Sq. In.
Maximum Oil Circulation..350 GPM
Gravity of Absorption Oil 36.8°API
Stripper Coil Pressure.....20# Ga.
Temperature of Stripper Coils .....80°F.
Temperature of Vapor Recompressor Coils.....80°F

This plant, operating with a 65# recompressor, will have a recycle to the absorber intake of 1,855 gallons of isobutane and will retain 79.2% of the isobutane in the field gas. With a 125# recompressor, the isobutane recycled to the absorber drops to 747 gallons and the plant will recover 86.1% of the isobutane. With a 250# recompressor, the isobutane recycle is 260 gallons and the retention factor 89.0%. If it were possible to handle plant vapors without recycle, the isobutane retention factor would be 91.0%.

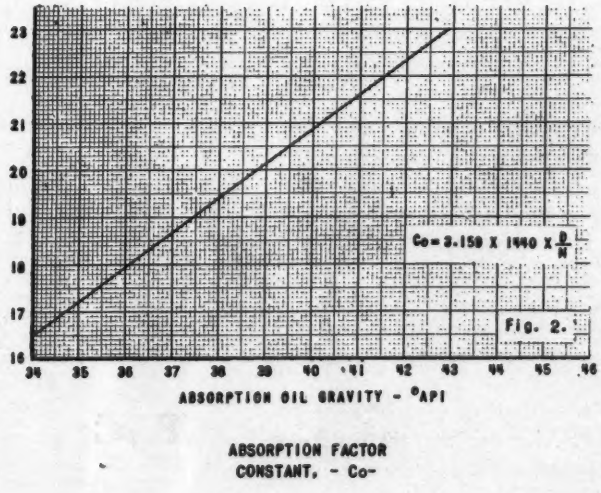
TABLE I.

.... Cycle	Vapors to Recompresser MCF/Day	Recompressor Indicated Horsepower	—Vapors to Absorber— MCF/Day	G/M Isobutane	Absorption Factor	% Isobutane Retained	Isobutane Recovered Gals./Day
65 lbs. Ga. Recompressor to Absorber Intake	814	51	534	3.47	0.776	79.2	9,980
125 lbs. Ga. Recompressor to Absorber Intake	696	68	338	2.21	0.791	86.1	2,150
250 lbs. Ga. Recompressor to Absorber Intake	677	93	215	1.21	0.800	89.0	2,225
*With no Recycle to Absorber	...	..	...	.	0.817	91.0	2,275

*Presuming all isobutane absorbed can be retained without recycle.

Table I also shows the recompressor indicated horsepower required for each pressure considered. For the assumed plant conditions, an increase in recompressor pressure from 65# gauge to 125# gauge resulted in an increase in isobutane production of 170 gals./day, at a cost of 17 indicated horsepower. The step from 125# gauge to 250# gauge increased production 75 gals. per day at a cost of 25 I.H.P. A very definite decrease in returns is therefore indicated for the higher pressures, with the ultimate limit being fixed very largely by available equipment. In fixing this ultimate limit, rectifier capacity must be given consideration as high recompressor pressures result in a material increase in the volume of propane and fixed gases in rectifier feeds. These comparisons, although calculated for a specific plant, will be found quite typical, as the character of plant vapors is surprisingly uniform from plant to plant.

The matter of recycle to absorbers and fixed gas contents of rectifier feeds becomes of major importance in high pressure plant operations. Under such conditions, a direct vapor rectifier is proving a very advantageous cycle. Figure No. 4 shows the flow sheet of such an installation in a Kettleman Hills plant. This cycle consists of directing the flow of all plant vapors, except cold oil vent tank vapors, through three stages of compression to a direct gas rectifier operating at such pressure that a propane-ethane reflux can be made in the presence of the fixed gases occurring in plant vapors. Vapors are cooled after the first and second stages of compression, but vapors from the final stage are delivered directly to the rectifier without cooling. All recompressor condensates are also directed through the vapor rectifier. This unit, operating with an overhead reflux ratio of two to one, is capable of reducing the ethane content of the kettle product to less than 1% and the propane content to 15-20%. The residue gas contains from a trace to one-



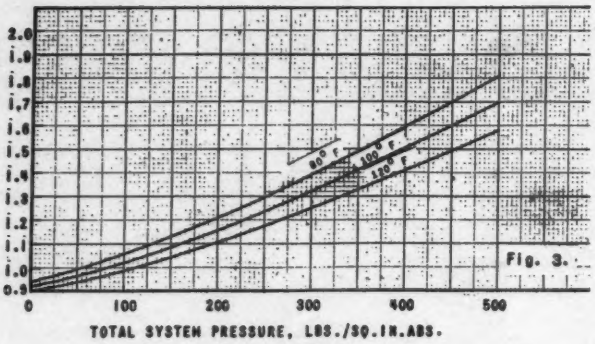


Fig. 3.

ISOBUTANE FACTORS TO CONVERT VAPOR PRESSURE TO FUGACITY

half of one per cent of isobutane.

This cycle eliminates all vapor recycle to absorber intake except that from the cold oil vent tank; it eliminates the fixed gas load from the final rectifier, and materially relieves the cooling requirements of the plant. This latter feature is particularly attractive, as plants "hopped up" for maximum isobutane absorption often are faced with overloaded cooling systems which are difficult to expand. It is, of course, desirable that oil and gas flows to the absorber be cooled to as low a temperature as practical. However, with the vapor rectifier cycle, vapors from the stripper, hot oil vent tank, and recompressor need be cooled only enough to accommodate compressor operation. With the vapor rectifier operating at 430#, a propane-ethane reflux can be made at temperatures around 100°F. The condensation of a propane reflux for final gasoline rectification is also greatly facilitated because of the complete elimination of methane and substantially complete removal of ethane from the rectifier feed.

To gain the maximum advantage of existing equipment, consideration must also be given to the method of venting rich oil. In plants operating at 150# and above, a very considerable advantage can be gained by venting the rich oil from the absorber before it enters the heat exchanger. This cold oil vent should be taken at as low a pressure as is practical. Vapors vented here will usually contain less than 0.5 G/M isobutane and the bulk of the fixed gas. This vapor can therefore be recycled to the absorber intake or treated separately with very little loss, and vapors occurring down stream from this point are much more condensable. The advantage of such a cold oil vent tank in plants operating at pressures below 150# is questionable, as gain that can be realized is offset by the necessity for using rich oil pumps.

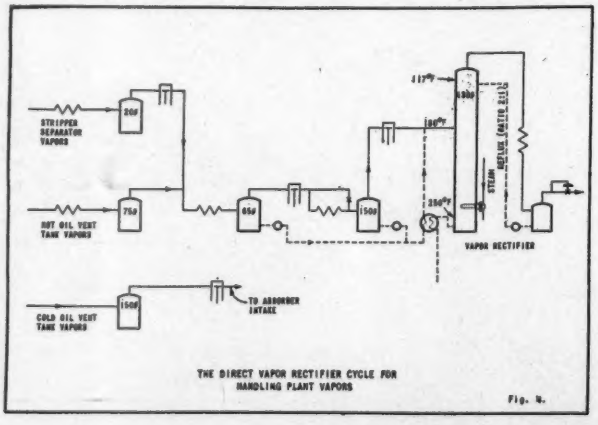
The advisibility of venting rich oil at points between the cold oil vent tank and the stripper is questionable. With a recompressor cycle there is no advantage to be gained from a condensation standpoint as poorer condensation in the stripper coils is offset by better condensation in the vapor recompressor system. There is, however, a horsepower and stripper capacity advantage to be gained by venting the rich oil before it enters the preheaters. Vapors vented here contain in the order of 2.0 G/M isobutane, and their recycle direct to the absorber is to be avoided where there is insufficient absorption oil circulating capacity to maintain high absorption factors.

The operation and instrumentation of rectifier systems for total isobutane recovery are subjects too broad to be covered extensively herein. However, a few generalizations will serve to outline the problem. Two methods are in common use: One, wherein all isobutane is retained in the natural gasoline which is then delivered to refineries for further fractionation, and the other, which effects separation of isobutane at the gasoline plant either as such or as a fraction of liquefied petroleum gas.

The retention of isobutane in the natural gasoline is contingent upon the ability to make a propane reflux for the gasoline rectifier. The control of such a system is most satisfactorily effected by placing the control element of the kettle vaporizer in the column 5 or 6 plates above the feed. This instrumentation results in variation of kettle and top temperatures in phase with the quality of the feed, and at the same time prevents the loss of isobutane in the residue vapor.

The production of isobutane as such or in a liquefied petroleum gas cut lends itself to a large variety of equipment arrangements and instrumentation. The arrangement most effective will be dictated by available equipment and specification requirements. Under certain conditions, rectifier side-cuts may be taken off which contain the bulk of the isobutane. When using a vapor rectifier,

(Continued on Page 25)



THE DIRECT VAPOR RECTIFIER CYCLE FOR HANDLING PLANT VAPORS

Fig. 4.

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CALIFORNIA OIL WORLD

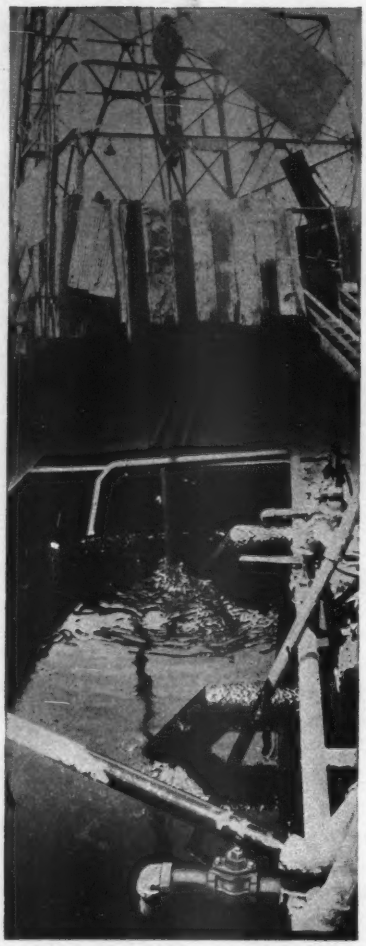
New Oil Base Drilling Fluid

A newly developed admixture for making an oil base drilling fluid has been used with successful results in the Coles Levee Field in California. Instead of using a standard clay base drilling mud, this new admixture embodies a material in powder form mixed with an oil base which can consist of any suitable stove oil, absorption oil, diesel oil or kerosene distillate. The powder, known as "Black Magic", is manufactured by Oil Base Drilling Fluids Company of Los Angeles. The material contains no lamp black.

Weight of the fluid is approximately 72 lbs. per cubic foot. Weight material may be added if necessary to bring the fluid up to higher weights required by various well conditions. The fluid is brownish-black in appearance when mixed.

Based on the results achieved while drilling through the producing zones in the Coles Levee Field and on data secured by extensive laboratory tests, the oil base drilling fluid made with this new powdered material appears to be particularly adaptable for circulation while drilling or coring oil bearing sands. Because the fluid contains no water except connate water picked up while circulating or small amounts accidentally allowed to enter the stream, the fluid should also aid considerably in preventing sloughing and caving when drilling through hydrous disintegrating shale.

If the fluid is properly mixed, there is practically no fluid loss, according to the manufacturer. Filter cake tests made by A.P.I. standards show zero filtrate loss. Cores are uncontaminated and are merely coated with this cake. The cake disintegrates in the presence of crude oil which has an aromatic content and when such crude is pumped into a well to displace the oil base drilling fluid after completion, it readily removes the plastering cake from the wall of the well.



One of the First Wells Drilled With Black Magic at Coles Levee Field, California.

Swabbing-in is, therefore, unnecessary except under unusual conditions.

Since the plastering cake formed on the formation is so thin, smaller clearances can be provided for liners. The possible clogging of perforations by mud is also eliminated.

The gel properties which are given to the fluid by the powdered admixture have been found to be particularly satisfactory. During the periods of quiescence when the drill string is out of the hole, no settling of weight material, cuttings or other inert matter has occurred. The fluid recovers fluidity rapidly on slight agitation.

Temperatures in excess of 240° F. have been found to have very little effect on the gel or plastering properties of the fluid. There is no formation of sludge to seal off the sand, and no hard gummy substance that might stick the pipe is produced.

A 20-mesh cloth on the vibrating screen has been found most satisfactory for removal of cuttings from the oil base fluid. While the cuttings settled out satisfactorily in the ditch during the drilling of the productive zones in the Coles Levee wells without the use of a shaker screen it is recommended that the returns be passed over a screen if the best results are to be secured.

Oil base muds have little tendency to gas-cut and in the wells drilled to date with this fluid no gas cutting has occurred. No salt water was encountered in these wells but in laboratory tests in which salt water was introduced it was found that the salt water did not flocculate the fluid.

The viscosity of this oil base fluid ranges between 50 and 60 seconds measured by A.P.I. Marsh funnel standard. Since oil base muds do not readily gas-cut, higher viscosities can be maintained when they are used. The drilling fluids has very good thixotropie properties and gels readily when agitation is stopped. However, it is readily pumpable and immediately becomes fluid. In case a quantity of the oil base fluid has stood in a tank for fifteen days and had a viscosity ranging from 97 to 103 seconds when it was to be put back into service. This was taken out of the tank with a small truck pump.

The oil base fluid is recovered after a well is drilled and can be used over and over again. In addition to the connate water picked up while drilling, other water may get into the mixture during storage. While a water contamination up to 14 per cent has been found to have little or no effect on this fluid, there is no necessity of using this fluid with a high water content. It has been found in the past with other oil base drilling fluids that bad settling

(Continued on Page 25)

THIS LAUGH OFF!!

Philosophical Redskin

Our ambition is nearly undermined by the fable of the Indian who was discovered by a bustling American super-magnate who was chagrined to see the redskin dozing at the door of his teepee while his squaw did all the work.

The magnate, highly incensed by this lack of enterprise, decided to inspire the Indian a bit.

"Chief," he said. "Why don't you go into town and get yourself a job in a factory?"

The Indian opened one eye lazily and contemplated the highly prosperous magnate. Then he closed his eye again and said: "Why?"

"Well," went on the m. enthusiastically, "you could earn a lot of money these days, maybe 75c, 85c an hour. Why, you could earn $30 or $40 a week."

This time the Indian didn't bother to open his eye. He just said: "Why?"

"Well," said the magnate, "if you worked hard and saved your money, pretty soon you'd have a bank account Wouldn't you like a big bank account?"

"Why?"

"Well," said the magnate, "with a big bank account you could retire and you wouldn't have to work any more . . ." The Indian opened his eye. "No working now," he said.

"This lady says you tried to speak to her at the station!"

"It was all a mistake, your honor. I was looking for my roommate's girl, whom I had never seen before, but who had been described to me as a vivacious blonde with classic features, beautiful complexion, perfect figure, smartly dressed and—"

"I don't care to prosecute the gentleman. Anyone might have made the same mistake."

There was a crash, and a ball came sailing through the kitchen window and landed at the housewife's feet. She quickly rushed to the door, only to find the street deserted.

About half an hour later a timid knock came on the door, and the scared voice of a small boy said: "Please, ma'am, here comes father to mend your window."

Looking up the road, she saw a man with a piece of glass approaching the house, so without further ado, she returned the ball to the boy and praised him for being so honest.

It did not take the man long to repair the window. Then he turned to the housewife.

"That'll be $1.50," he said.

"What!" she exclaimed. "Wasn't that boy your son?"

"Bless you, ma'am," said the glazier, "ain't you his mother?"

"Pard'n me, shtranzher—wherzh other side uva street?"

"Why, right over there."

"Thash what I thought, but I wuz zhust over there and they shed it wuz over here."

A soldier whose main trouble was extreme talkativeness, was on escort duty with a corporal taking a prisoner to headquarters.

Before starting, he had been told that on no account was he to speak; a bet of a pack of cigarettes had been made that he couldn't remain silent until reaching headquarters.

They went in single file, the soldier quite mute.

On arriving at headquarters, the corporal, without looking around, said: "Well, Tommy, you've won the bet."

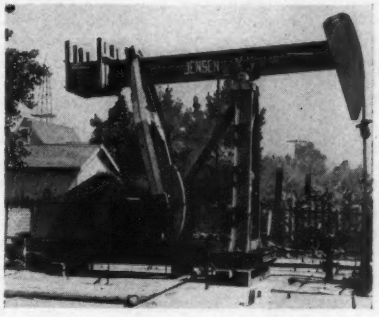
"Yes, but you nearly had me when the prisoner escaped."

Father: "Why do you have dates with that girl?"

Son: "Because I want to."

Father (suspiciously): "Want to what?"

Throughout California you'll find JENSEN JACKS doing a smooth, dependable, economical job. This picture shows a 14-DC JENSEN handling a 3000' well for the Petroleum Management Corporation, Wilmington.



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Axelson Manufacturing Co. Army-Navy "E" Award Story

In the spring of 1892 two men bought a machine shop in Santa Ana, Calif., and called it the Acme Iron Works. The two men were C. F. and G. A. Axelson.

On September 3, 1942, fifty years later, the one-time Santa Ana machine shop, now the world-famous Axelson Manufacturing Company, climaxed half a century of progress by receiving the Army-Navy "E"—dramatic testimony to the production efforts of 1200 workmen, and fitting tribute to a lifetime of endeavor by a hard-working, keen-visioned management.

Representative employees and executives of Axelson Manufacturing Company display Army-Navy Burgee for gathering. Reading from left to right: G. A. Axelson and C. F. Axelson, founders, Hubert McDowell, D. F. Axelson, Ivan Likert, and J. C. Axelson standing directly behind Angelo Bullera.

In presenting the coveted "E" to the Axelson personnel on Thursday, September 3, Lieutenant Colonel A. R. Baird, Assistant Chief of the Los Angeles Ordinance Region, stated: "This award is a form of recognition which you have won on merit, and which you have richly deserved . . . remember, that it was given by the Army and Navy of the United States of America in recognition of the fact that you did a good job of producing machines, tools, gauges, and other essential items for the armed forces of your country and her Allies, and that the war is not over yet. Remember, that you are all soldiers on the production line of freedom, and that what you are doing for America is being done voluntarily and freely, without regimentation or coercion."

G. A. Axelson, Chairman of the Board of the Axelson Manufacturing Company, accepted the award for the Company at the ceremony attended by high-ranking Army and Navy officers, civic and industrial leaders, employees and friends of the firm. Sheriff Eugene W. Biscailuz of Los Angeles County acted as program chairman.

Sterling silver lapel pins bearing the Navy "E" on the front and inscribed on the back with "Army-Navy Production Award" were received for the employees by Angelo Bullera. In pledging his Company's continued efforts, G. A. Axelson stated: "In accepting the Army-Navy production flag for high achievement in the production of war equipment, we of Axelson pledge ourselves to greater efforts and say to the men of our armed forces, 'Your battle is our battle, and with God's help we will fight it together —to victory'."

Axelson laid the ground work for its eventual leadership in the oil well pump and sucker rod field back in 1898. It was in this year that Axelson produced a new and revolutionary type of oil well pump, employing for the first time the metal-to-metal principle which later became standard in petroleum production.

Until disruption of foreign markets caused by the present war, Axelson was represented throughout the world, and it could truly be said "The sun never sets on Axelson Equipment."

Oil well pumps and sucker rods have constituted the major part of the Axelson business for forty-four years—since 1898. Heavy duty lathes have been an important product for over a quarter of a century—since 1915. Gray Iron Castings for the Company's own use and for the trade have been made for thirty-seven years—since 1905. Tools and Gauges for use in Axelson factories have been produced for many years,

Employees of the Axelson Manufacturing Company receive the Army-Navy Production E Flag for a job well done.

and for sale to the trade since 1930.

The $1200.00 investment of C. F. Axelson and G. A. Axelson, which gave birth to the Acme Iron Works fifty years ago, has returned to the families of hundreds of Axelson employees many millions of dollars in well-earned rewards—as well as the benefits derived by the founders, their sons and families. Two splendid plants have taken the place of the little shop in Santa Ana. A sales organization that encircled the world put Axelson products whereever there was oil to be found. The policy of the original founders who still watch over the affairs of the Company is still—PROVE AND IMPROVE!

Today the production facilities of the Axelson Manufacturing Company are devoted almost 100 per cent to defense work.

Increasing Isobutane Production in Natural Gasoline Plants

(Continued from Page 20)

the isobutane may be isolated by cutting deep into the natural gasoline and condensing the entire rectifier residue for an isobutane cut. Where isobutane is produced as such, series rectification becomes necessary.

In conclusion, it is important to emphasize again that the most satisfactory method of producing the maximum production of isobutane with the minimum use of steel is an individual problem for each plant. With regard to absorption of isobutane, the absorption factor formula and correlation are available which permit a mathematical solution to this phase of the problem.

The handling of plant vapors presents no problem where adequate absorption oil capacity is available. With oil capacity limited, recompressor or vapor rectifier systems offer the most promising solution.

1. Proceedings, California Natural Gasoline Association, Feb,, 1930, "Theoretical Analysis the Key to Absorption Plant Design," by Alois Kremser.
2. Proceedings, California Natural Gasoline Association, May, 1938, "Equilibrium Relations for Paraffin Hydrocarbons at High Pressures and Ordinary Temperatures," by Robert B. Bowman.

R. A. Chaffee, of Clark Bros. Is Air Corps Lieutenant

Rupert A. Chaffee, for four years engaged in engineering work for Clark Bros. Co., Inc., of Olean, N. Y., resigned his position in July to enter military service and has been assigned to the Academic Department of the Army Air Forces Technical Training Command, at Sheppard Field, Wichita Falls, Texas,

Lieut. R. A. Chaffee

with the rank of Second Lieutenant.

Lieut. Chaffee graduated from Ohio State University, in 1938, with the Mechanical Engineering degree, and immediately entered the employ of Clark Bros. in the Experimental and Testing Department. Two years later he became an Erection Engineer for the company covering the Midcontinent and California oil fields, serving in this capacity until his resignation in July.

Glenn Pitts With Petroleum Equipment Co.

Glenn Pitts, formerly with The Republic Supply Co. and The Youngstown Steel Products Co. of Calif., has joined the Petroleum Equipment Company where he is specializing in Taylor flanges and welding fittings, and Gustin-Bacon Roller grip and Gruv-a-grip couplings. Mr. Pitts will travel the Pacific Coast.

New Oil Base Drilling Fluid

(Continued from Page 22)

of the ingredients occurs if this water contamination is allowed to accumulate. This fluid can be automatically regenerated either while in the circulating system or in storage by the addition of more of the powder. In the case of stored fluid it is the practice to mix an amount of new fluid necessary to bring the total quantity up to the amount desired and add this to the old fluid.

By the addition of more fluid made with the usual mix of two sacks per barrel, a considerable quantity of the water in the old fluid is eliminated. For example, if 500 bbl. of stored fluid contains 10 per cent water, the addition of 500 bbl. of new fluid will reduce the water content of the combined 1000 bbl. not to 5 per cent but to a little more than one per cent.

The lubricating qualities of the oil base drilling fluid have aided materially in increasing the depth drilled per bit. Since the greatest wear on bits is in the bearings and bushings, many bits have to be pulled out long before the cutters are worn. By reducing bit replacements, drilling time is saved by the reduction of round trips.

Oil Base Drilling Fluids Company was recently formed by George L. Miller and J. A. Moore, well-known west coast drilling fluid engineers. Offices have been established at 1616 Santa Fe Avenue, Los Angeles.

New Congress Committee To Probe Oil

Another unofficial Congressional committee has been organized to investigate the oil situation. Headed by Representative Woodrum, of Virginia, the committee at the outset will confine its efforts to obtaining larger gasoline rations for traveling salesmen in the East. The group will confer and cooperate with other unofficial Congressional groups which are investigating oil matters. Hearings will be scheduled later.

Field Development

Los Angeles Basin

One Ended One Begun In Oak Canyon Field

Western Gulf Oil Co. effected a good completion and started immediate work on a new well in the Oak Canyon field in westerly Los Angeles County. Near the west quarter corner of sec. 32,5n-17w the company completed Gilmour-U.S. No. 2 at 7112 ft. from the interval 7030-7080 ft. flowing 400 bbls. of clean 34.0 gravity oil and 135,000 cu. ft. of gas through a 16/64 in. bean. Last production was settled to 300 bbls. under the same wraps with tubing pressure at 600 lbs. and the casing dial showing 800 lbs.

The company is currently asking for bids to drill Vesta B. Wickham No. 1 for which rig has been built 483 ft. north and 1723 ft. east of the southwest corner of the same section.

Tide Water Works Aliso Canyon Field

Tide Water Associated Oil Co. is grading location for Porter No. 18 at the west flank of the Aliso Canyon field while on the Fernando lease, No. 1 is drilling in sand and shale at 3268 ft. after finding a suspected fault zone on a drilling break at 2190 ft.

To the west of the field, on sec. 28,3n-16w, where the Company's Sesnon No. 1 drilled to 8912 ft. to effect small gas production, operators are directionally redrilling at 6814 ft. in search of better saturation.

Continental Starts New Turnbull Well

Continental Oil Co. is grading site for Turnbull Community No. 4 in the Turnbull Canyon field. Producing the type of oil urgently needed, the field has been given approval for further development on a one well to 20 acre spacing. The latest hole is located 798 ft. northerly along the south line of La Cuesta from the centerline of La Subida Drives thence 371 ft. westerly at right angles in sec. 13,2s-11w. The company is also rigging up portable tools to resqueeze a c.p. job at 3373 ft. in Turnbull Comm. No. 1, which has been making increasing quantities of water.

S. O. Co. To Resume West Coyote Work

In the West Coyote field Standard Oil Co. is preparing to resume drilling on Murphy-Coyote No.'s 130 and 131 which were given technical spuds some two months ago. It is understood that the technicalities which delayed full OPC approval have been satisfactorily adjusted. To the west of here in the McNally area The Texas Co. is laying plans to drill another deep test in search of production conceded by most geologists to exist somewhere in the area.

(Continued on Page 29)

LOS ANGELES BASIN WILDCATS

Area	Well	No.	Section	Depth	Status
Castaic	The Texas Co., Towle	1	3,4-17	5951	Drilling
	Young, Roy W., Inc., Walker	1	11, 5-16	9981	Idle
Del Valle	Union Oil Co. N. L. & F.	1	20-4-17	2090	Drilling
Las Llajas	West'n. Gulf O. Co., Brady	1	13, 3-17	1330	Drilling
Newhall	James C. Brazell, Trustee, Perkins	1	11,3-16	4473	Idle
Puente	Shell Oil Co. Inc., Garnier	1	33,1-10	1176	Drilling
Puente Hills	Commonwealth Oil Co., Roland	1	14,2-10	998	Fishing
	Melvin Hansen, Dragna	1	24,2-10	2702	Drilling
Rio Hondo	Potrero Oil Co., Newman	1	32, 1-11	5430	Idle
San Fernando	Fernando Oils, Ltd., Chatsworth	1	18, 2-16		Rig
	Tide Water Assoc., Sesnon	1	28, 3-16	8912	Redrilling
Whittier-La Habra	Los Nietos Valley Oil Co., Woodward	1	29,2-11	2624	Idle
	Orange County				
Bolsa Chica	La Bolsa Ro. Synd., Crane	1	22, 5-11	7310	equip. removed
Costa Mesa	Thompson, Milton N., Banning	1	9, 6-10	5649	Idle
Yorba Linda	Shell Oil Co., Olinda Fee No. 4.	55-16	16,3-9	3616	Drilling
	Riverside County				
San Jacinto	Wonder Oil Co., Stroh	1	30,4-1		Rig
	San Bernardino County				
Carbon Canyon	Stella, E. F., McDermott	2	5, 3-8	585	Drilling
	Municipal Oil Co., Mohala	1	13,3-8	4217	Cleaning out

San Joaquin Valley

Paloma Outpost Test Indicates Extension

Results of formation trial of the interval 11,000 to 11,043 ft. in General Petroleum Corp.'s Gallagher No. 61-33 indicates that the company has extended the producing limits of the Paloma field nearly a mile to the north. Located near the north line of sec. 33, 31s-26e, the well found the promising zone much lower than in previous field drilling, indicating that a fault exists along the northerly flank of preconceived limits. Adding further confirmation to the idea of structural change is the fact that oil collected from a spray blown during the trial was found to be 30 gravity greenish oil in contrast to the high gravity condensate heretofore produced at Paloma.

The test from 11,000 ft. to bottom at 11,043 ft., open 57 minutes with a 3040 ft. water cushion, produced a terrific gas blow and a light spray of oil which subsided after 30 minutes. Only a few feet of heavy oil and mud was left in the tester for analysis. At present the company is fishing 38 ft. of tailpiece left in the hole and plans to land casing at 11,000 ft. for attempted completion when the hole is cleared.

Development here is not expected to boom following discovery since most applications to drill are being held up pending completion of the unit plan being designed for this field.

Mid Valley Well Quits

Bolsa Chica Oil Corp. abandoned its wildcat Clark No. 1 at 2930 ft. after bottoming in gray sand without having encountered showings. Located in sec 36, 25s-26e, the well sought production in one of the fault blocks comprising the area. On sec. 16, 26s-27e Fred Jasper, Jr. was last reported at 4290 ft. in greenish sand and clay after entering the formation at 4160 ft. Only a few oil spots were found in the top of the Vedder at 3360 ft.

South Coalinga Area To See Development

The semi-productive area at the southerly flank of the Coalinga Old field is to be given another chance by The Texas Co., which is rigging up to attempt recompletion of the old Boychester Oil Co. well which was drilled to 3055 ft. in the northeast corner of sec. 18, 21s-15e in 1909. The company also located Boychester No. 83-18 some 1200 ft. further south in the same section for a grass root trial. On sec. 8, 21s-15e Tide Water Associated Oil Co. is preparing to drill No. 11-a near its present producing wells.

Alpaugh "Cat" Yet Continues

Elmer C. von Glahn's wildcat in the Alpaugh area of Kings County is drilling ahead at 9361 ft. Located on sec. 4, 23s-22e, the well has noted several intervals showing gas and slight cut and odors with nothing yet encountered which indicates the advisability of testing. It is understood that an electric log at 9500 ft. will be studied to determine the well's probable future. Certainly nothing yet has been found to disprove the possibility of finding saturated sands at greater depth. Many of the Valley deep zone strikes have been made after parallel drilling histories.

Standard "Cat" Cores Oil Stains

Standard Oil Co.'s Pleasant Valley No. 82-29F in the Guijarral Hills area is coring ahead in gray sand and shale after finding a few oil stains at 7000 ft. Located in sec. 29, 20s-16e, the well seeks production comparable to that in the Coalinga Eocene pools immediately to the north and the Kettleman North Dome field to the southeast.

(Continued on Page 30)

SAN JOAQUIN VALLEY WILDCATS

Area	Well	No.	Section	Depth	Status
	Fresno County				
Coalinga	The Texas Co.	83-18	18,21-15		Location
Guijarral Hills	Lytle, Robt. S., Opr., Well	68-28F	28,20-16	11,586	Suspended
	Standard Oil Co., Well	82-29F	29,20-16	7009	Drilling
Tranquility	Shell Standard, Henderson	66-22	27, 15-15		Rig
Wheatville	Gen. Pet. Corp., Noble	88-9	9,17-18	6463	Drilling
	Kern County				
South Belridge	E. A. Parkford, Well	5	12-29-21	1123	Completing
Comanche Point	L. E. Barat Synd., Ham Johns	1	5,11-18	1604	Testing
Dyer Creek	Fred Jasper, Jr., Well	1	16,26-27	4290	Drilling
	Bolsa Chica Oil Corp., Clark	1	36,25-26	2930	Abandoned
Edison	M.T.M. Oil Co., Inc., Well	1	23,30-30	2460	Suspended
McFarland	Tide Water Assoc. Oil Co. Strine	32-15	15,26-26		Rigging up
McKittrick	Americal Pet. Inc., Americal	1	2, 30-21	5450	Redrilling
	MacVee Assoc., well	1	33,29-21		Grade
McKittrick Front	Westates Pet. Corp., Kimball	4	32,29-22	1769	Abandoned
Midway-NW.	C.C.M.O. Co., Well	24-1	1,32-22	3946	Abandoned
Midway-SE.	The Texas Co., P.U.P.	2	33,11-23	6085	Drilling
Paloma	Gen. Pet. Corp., Benco	87-28	33,31-26		Location
Paloma	Gen. Pet. Corp., Gallagher	61-33	33,31-26	11,043	Testing
	West'n. Gulf Oil Co., L.A.C.	36-1	1, 32-26		Foundation
Poso Creek	Dolley & Dugan, Sesnon	1	17, 28-27		Location
Shale Hills	Tideland Oil Co., Grant Est.	1	4, 27-28	4064	Idle
Strand	T.W.A.O. Co., KCL	56-8	8, 30-26		Foundation
	Kings County				
Alpaugh	Elmer C. vonGlahn, Well	1	4,23-22	9361	Drilling
Hanford	Cont. Oil Co., Drummond	1	36,18-22	4597	Drilling
Pyramid Hills	Pac. O. & G. Dev., West Slope	2	20, 24-18		Location
	San Luis Obispo County				
Midway, NW	C.C.M.O. Co., Thomas	1	1,31-21	104	Drilling
	Tulare County				
Pixley	Continental Oil Co., Reynolds	1	15,23-25	5847	Abandoned
Tulare Lake	Shell Oil Co., Inc., Tulare	21-28	28,22-20		Location

Coastal District

Universal to Spud Careaga Area Test

Universal Consolidated Oil Co. is getting under way with Careaga No. 1 on sec. 5, 8n-33w two miles southeast of the old Orcutt field. Scheduled to test to approximately 7000 ft., the well seeks Miocene production indicated in the Arnold Oil Corp. Arnold-Apache No. 2 which was drilled to 6825 ft. on the next southerly section and the small 28 gravity production which Douglas-Stratton Oil Co. effected in its 7238-ft. well in the same section 8.

Conoco Completes San Miguelito Well

Continental Oil Co. finished Grubb No. 27 on sec. 23,3n-24w at 7897 ft. in the intervals 6462-6970 ft. and 7630-7897 ft. Tests of the upper intervals produced mostly gas but the combined zones made 399 bbls. of 28.6 gravity oil cutting 8.0% and 1,423,000 cu. ft. of gas through a one-inch bean.

At Rincon the company's attempt to find deep production under the field is again under way with its 10,065-ft. Hobson No. C-10 redrilling to the northwest at 5529 ft. The straight hole bottomed in wet looking sand at a low structural point.

Cat Canyon Well Continues Drilling

Bel-Air Oil Co.'s Cat Canyon field outpost, Williams No. 1 in sec. 25, 9n-33w, is drilling ahead in brown shale with streaks of oil sand after entering the sandy phase at 2458 ft. Top of the Sisquoc was found at 1840 ft. with the Miocene entered at approximately 4300 ft.

Standard Oil Co.'s South Basin-Lloyd Community No. 1 on section 15 is yet fishing a tester packer at 4996 ft. after bottoming in heavy Monterey showings at 5245 ft. Top of the Monterey was found near 4700 ft. in this well. The company is rigging up on Los Flores No. 5 on section 21 of the township.

New Wells Planned in Sespe Canyon

Volunteer Petroleum Co. has been granted OPC approval of two wells in the Sespe area. The projects will be Tar Creek No. 3 on sec. 28, 5n-19w, and Phillips No. 2 on section 29 of the township.

On sec. 19, 4n-19w W. E. McCaslin is rigging up to deepen Burson No. 1 from 2039 ft. while in sec. 1, 4n-20w Merchants Petroleum Corp. is deepening Cochran No. 5 at 1760 ft., employing cable tools on the day tour only.

COASTAL COUNTIES WILDCATS

Area	Well	No.	Section	Depth	Status
	Santa Barbara County				
Careaga	Univ. Consol. Oil Co., Careaga	1	5, 8-33		Prep to spud
Cat Canyon	Alphonzo E. Bell Corp., Gilmore	1	23, 9-33	6457	Idle
	Bel-Air Oil Co., Williams	1	25, 9-33	4380	Drilling
	Standard Oil Co.	SBLC1	15-9-33	5245	Fishing
	Standard Oil Co., Los Flores	5	33, 9-33		Rigging up
Lompoc	Alphonzo E. Bell Corp.. Lompoc	6	28, 8-34		Grade
	Fickert Oil Co., Ltd., Well	1	8, 7-33		Rig
Los Olivos	Tide Water Assoc O. Co., Davis	1	33, 8-31	5389	Drilling
Orcutt	Standard Oil Co., Rice Ranch	1	14, 9-34	9254	Suspended
	Ventura County				
Bardsdale	Hopland Oil Co., Well	1	1, 3-19	4634	Idle
	Lytle, Robt. S., Opr., Elkins	1	6, 3-19		Rig
	Santa Marino Oil Co., Elkins	1	7, 3-19		Rig
	Ventura Southern Oil Co.	G-1	19, 3-19	5363	Idle
Conejo	Sycamore Oil Co., Boylan	1	23, 1-20	2747	Idle
	L. A. Basin Oil Co., Well	1	4, 1-20	1700	Drilling
Eureka Canyon	Phillips & Nichols, Well	2	33, 4-18	667	Completing
Ojai	Coates, Spencer D., Pirie	5	7, 4-22	1006	Drilling
	Kelalee Pet. Co., Harvey	1	8, 4-21		Rig
Oxnard	Royalty Service Corp., Leonard	1	19, 2-22	8135	Drilling
Piru	Delroy Pet. Corp., Fisk C. H.	1	22, 5-18	2629	Idle
	Tide Water Assoc. Oil Co., Hidden	2	5,4-18		Location
Sespe	Merchants Pet. Corp., Cochran	1	4-20	1760	Drilling
Timber Canyon	Crude Oils., Inc., West	1	19, 4-20	958	Idle
	Henderson-Ortez Oil Co., O'Leary	1	29, 4-20		Rig
Torrey Canyon	Union Oil Co., Torrey	60	5, 3-18		Location

NORTHERN COUNTIES WILDCATS

County	Well	No.	Section	Depth	Status
Colusa	Pacific National Pet. Corp.	1	17,17n-4w	1402	Idle
Contra Costa	Joseph Faria, Jr.	1	21-2n-1w		Rig—Idle
Glenn	Ohio Oil Co., Willows-Block	A-1	18, 20n-2e		Rigging up
Humboldt	The Texas Co., Holmes-Eureka	2	22-3n-1w	4438	Drilling
Madera	Blake, T. E., Chuck	1	28, 10s-17e		Rig—Idle
	The Texas Co., Chowchilla	27-26	26,11s-14e	5466	Drilling
Monterey	Loma Grande Oil Co., Corey	1	23,24s-10e	4318	Idle
	Wm. C. Jensen, Vierra	1	7-13s-2e		Rig
San Benito	The Texas Co., Henderson	1	33,16s-12e	2249	Abandoned
	Union Oil Co., Friedman	1	13,16s-12e	3824	Drilling
San Joaquin	Standard Oil Co., Blewett Com.	3	23, 3s-6e		Rig
Solano	Standard Oil Co. Fontana Farms	1	23,3n-1w		Rigging Up
	Standard Oil Co., Suisun Com.	1-2	36,4n-2w	4260	Drilling
	Standard Oil Co., Suisun Com.	2-1	25, 3n-1w	7300	Fishing
Tehama	The Texas Co., Walbridge	1	32,28n-2w		Rigging up
Yolo	Tide Water Assoc. Oil Co., Woodland Comm	1-8	8,9n-1e	3587	Abandoned

Los Angeles Basin
(Continued)

Havenstrite Testing Deep Del Valle Zone

The Barnes No. 2 project of R. E. Havenstrite, Operator, in the easterly Del Valle Pool is making open hole tests of oil sands in the interval 7005 to 7193 ft., which were cored after the normal Del Valle zone was found from 6548 to 6750 ft. The new zone, which is made up of streaks of shale, oil sand and gassy sands, has not yet been named nor have any of the field wells heretofore tested this zone.

In the westerly field pool Ohio Oil Co.'s Vasquez No. 4 is turning to the right at 3703 ft, while on an adjacent location Standard Oil Co.'s Sepulveda No. 4 is making hole at 3940 ft. Preparing to move in on the Handy lease, Herley-Kelley are attempting to find the best location on a mountainous 40 acre portion of their acreage for which provisional OPC drilling approval has been given.

Bolsa District Well Finished

On the flats at the westerly limits of the Huntington Beach field Signal Oil and Gas Co. effected another of its good completions when Signal Bolsa No. 25 started flowing by heads at an estimated 300 bbl. rate. Operators are now rigging pump to handle the clean 25 gravity oil to better advantage. The flow came after bottoming in gray sand at 3948 ft. and plugging back to 3857 ft. to finish. Nearer the main field Standard Oil Co.'s Huntington No. A-38 is bottomed in oil sand and gray sand at 3700 ft. and is preparing production trials after cementing 9 in. pipe at 3145 ft. and cementing through perforations at 1042 ft.

Union Oil Wildcat Starts at Del Valle

Union Oil Co.'s exploratory well, Newhall Land & Farming No. 1, is drilling at 2090 ft. Located on sec. 20,4n-17w the test lies immediately south of the Del Valle field and due west of the Newhall Potrero field.

Barnsdall Continues Newhall Potrero Work

In the Newhall-Potrero field, north of Pico Canyon in Los Angeles county, Barnsdall Oil Co. continues development of its holdings. Currently driling on sec. 27,4n-17w R. S. F. No. 30 is at 7157 ft. after finding the First zone at 6245 ft. and the top of the Third at 6965 ft. No. 21 in the same section is waiting bigger tools after bottoming at 310 ft. and cementing 13 ⅜ in. casing at 294 ft. In the southerly section of the field on section 36, the company's No. 32 is proceeding at 5489 ft. First to find production at this flank was C. G. Willis, who is reported preparing to drill again on his acreage.

In the northerly reaches of the area The Texas Co.'s Newhall No. 1, on sec. 22,4n-17w, cored oil sand in the interval 7763-7773 ft. and entered the main zone at 7812 ft. which carried to bottom at 7843 ft. The company is preparing to run a testor on the sands which are much lower than those found in the present field limits and which have not yet been described as to quality.

Formation Troubles Las Llajas Area Try

Western Gulf Oil Co. is having trouble getting away in Brady Estate No. 1 on sec. 13,3n-17w, a mile and three quarters south of the old Pico Canyon field. With total depth at 1330 ft. the well is redrilling a third time in an effort to keep a straight hole through formation that has been taking circulation. 18 ⅝ in. surface casing was cemented at 374 ft.

Shell Oil Starts Puente Area "Cat"

Shell Oil Co., Inc., spudded its Garnier No. 1 on sec. 13,1s-10w in the Puente area and was last reported drilling near 1200 ft. Located more than a mile northwest of the Brea-Olinda field and due west of Puente Hills, the current try is on virgin territory since only one shallow hole has been drilled within a mile of it.

Coastal District
(Continued)

Ohio Oil Rigging Glenn County "Cat"

Ohio Oil Co. is rigging up portable equipment to drill Willows Block A No. 1 as a gas test on sec. 18, 20n-2w in the Willows area of Glenn County. No modern drilling has been done in the immediate area although the Central Forest Co. did drill two post holes nearby several years ago.

Los Olivos Try Coring Ahead

Tide Water Associated Oil Co. is coring Davis No. 1 in cherty shale at 5389 ft. on sec. 33, 8n-31w in the Los Olivos area of Santa Barbara County. The well is being deepened from 5050 ft. after production trials on 470 ft. of zone produced only a small amount of heavy, tarry oil before pumping off.

Two Start New Work In Rio Vista Field

Two new projects are getting under way in the Rio Vista gas field. First will be Peter Cook, Jr.'s northerly flank well on sec. 18, 4n-3e, to be followed by Standard Oil Co.'s Bradford Community No. 2-1 on sec. 28, 3n-3e. Western Exploration Co. is not yet prepared to start Cook No. 1 on sec. 6, 3n-3e.

Lytle To Drill Bardsdale Try

Robert S. Lytle has built rig for Elkins No. 1 on sec. 6, 3n-19w in the Bardsdale area of Ventura County. The test will be relatively deep for this section of the coast, being headed for the Eocene age. On the adjacent section 7 the San Marino Oil Co. is preparing to rig up Elkins No. 1 for immediate drilling.

First Gal: "What's a military objective, Helen?"

Second Ditto: "Just walk past those soldiers on the corner. You'll find out."

San Joaquin Valley
(Continued)

Tide Water Plans Strand Wildcat

Tide Water Associated Oil Co. poured foundation for a Strand area wildcat 1650 ft. north and 330 ft. east of the south quarter corner of sec. 8, 30s-26e, a mile east of the Strand field on Kern County Land Co. property recently acquired from the Standard Oil Co. The well, KCL No. 56-8, is designed as a deep test expected to clarify in part the geologic complexities existing on the field's easterly flank. Production is expected in the Stevens zone with the possibility that the Vedder, which proved unproductive in the field, may also prove good.

Universal Starts Lost Hills Well

Universal Consolidated Oil Co. is grading to drill well No. 17D at the westerly flank of the Lost Hills field. Situated 480 ft. south and 2210 ft. west of the northeast corner of sec. 30, 26s-21e, the project is the first of several for which permission has been secured on a one well to five acre basis.

Midway-Sunset Work Proceeds

The shallow development program in the Midway-Sunset area continues its moderate pace with an average 12 strings at work. The Chanslor-Canfield Midway Oil Co. and Standard Oil Co. remain the most active with several strings running with Richfield, National, H & T, and Bankline Oil Co.'s running one each.

Tide Water Readys McFarland Wildcat

Tide Water Associated Oil Co. is rigging up and drilling water well for Strine No. 32-15 on sec. 15, 26s-26e in the McFarland area. Located some three and a half miles east of the town of McFarland, the well is drilling an area unprospected for a radius of more than a mile, with its forerunners having gone only to relatively shallow depths.

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Standard Oil Co. of California Opens New Sales Office

The selection of Long Beach as the location of a new district sales office was announced today by the Standard Oil Company of California. Company officials pointed out that the vast industrial and population growth of Southern California had made it necessary to provide closer sales and operations contact with Standard's branch offices. The new Long Beach District Office, which will cover parts of seven counties, is designed to fulfill this need. The move will bring a staff to Long Beach in addition to those now at the company's Long Beach Bulk Sales Station. Present plans are for occupying offices on the fifth floor of the Jergins Building on October 27. Mr. C. R. McMillan has been appointed district sales manager, and will include on his staff an assistant district manager, credit manager, sales engineers, and special technicians. Mr. McMillan has been associated with Standard of California for twenty-four years and has a broad background of sales experience. The Long Beach branch organization will continue to be located at the Bulk Station under the direction of W. A. McAfee, branch manager.

The Long Beach office will be one of twelve company district sales offices in the West. The others are located at Phoenix, Los Angeles, San Diego, Bakersfield, San Francisco, Sacramento, Portland, Seattle, Spokane, Salt Lake City and Honolulu. The area over which the new office will supervise sales and operations will include all of Ventura, San Luis Obispo and Santa Barbara counties west of the mountains and parts of Los Angeles, San Bernardino and Riverside counties. The Standard branch offices in these areas are at San Luis Obispo, Santa Barbara, Ventura, El Segundo, San Pedro, Santa Ana, Pomona, Riverside, San Bernardino and Long Beach.

"It's sure a tough old world," mused the tool pusher.

"It sure is," answered the driller. "Wouldn't it be great if one of us had all the money in the world?"

"If you had all the money in the world, what would you do with it?

"Well, the first thing I'd do would be to start paying it on my debts as far as it would go."

Former CNGA Taft Chapter Chairman with Permanente Metals

Chet Beard, active for many years in CNGA affairs and a past chairman of that association's Taft Chapter, has accepted a position as process engineer with Permanente Metals Corporation in Campbell, Calif.

Chet, as he is known to his many friends in the natural gasoline industry, was formerly associated with C. C. M. O. where he was a representative of the gas department and later was in charge of gas and water operations for Midway, Kern Front and Kern River. He also was previously associated with Los Angeles Gas & Electric Corporation in that organization's gas department. In a letter announcing his move addressed to W. W. Robinson, Jr., president of CNGA, Chet sent his best wishes and regards to his wide circle of friends in the industry together with the request that any who may be in his vicinity look him up.

7653 General Electric Men Now In Armed Services

More than 2600 General Electric men entered the armed forces of the United States in the past two months, bringing the Company-wide total to 7653 in the fighting forces at the end of July, it was announced recently by General Electric officials.

This brings the percentage of male employees of the Company now in the armed forces up to 7.4, with the men enlisting or being called to service at the rate of almost 300 a week.

Of the total, 4120 were called into service under the Selective Service Act, 1222 entered by reason of membership in the National Guard or Organized Reserves, and 2311 enlisted in the Army, Navy, and the Marines.

Of the 1222 in the National Guard or Reserves, 300 were in the National Guard, 623 in the Organized Reserves, 281 in the Navy Reserves, and 18 in the Marine Reserves. Among the enlisted men, 1174 volunteered for the Army, 875 for the Navy, and 262 for the Marines.

Aviation Gasoline Output Beyond Expectations

Production of 100-octane aviation gasoline for America's warplanes is now "far beyond what anyone believed even remotely possible a year ago," Petroleum Coordinator Ickes said in a speech on September 16. "The program has been so planned that the little refiners have been brought into the program and so that taxpayers also save many millions of dollars every year because of the favorable prices negotiated by members of our staff," he continued. Ickes praised the oil industry for cooperation with his office and far "patriotically, efficiently, unstintingly, indefatigably doing its part to hasten the victory."

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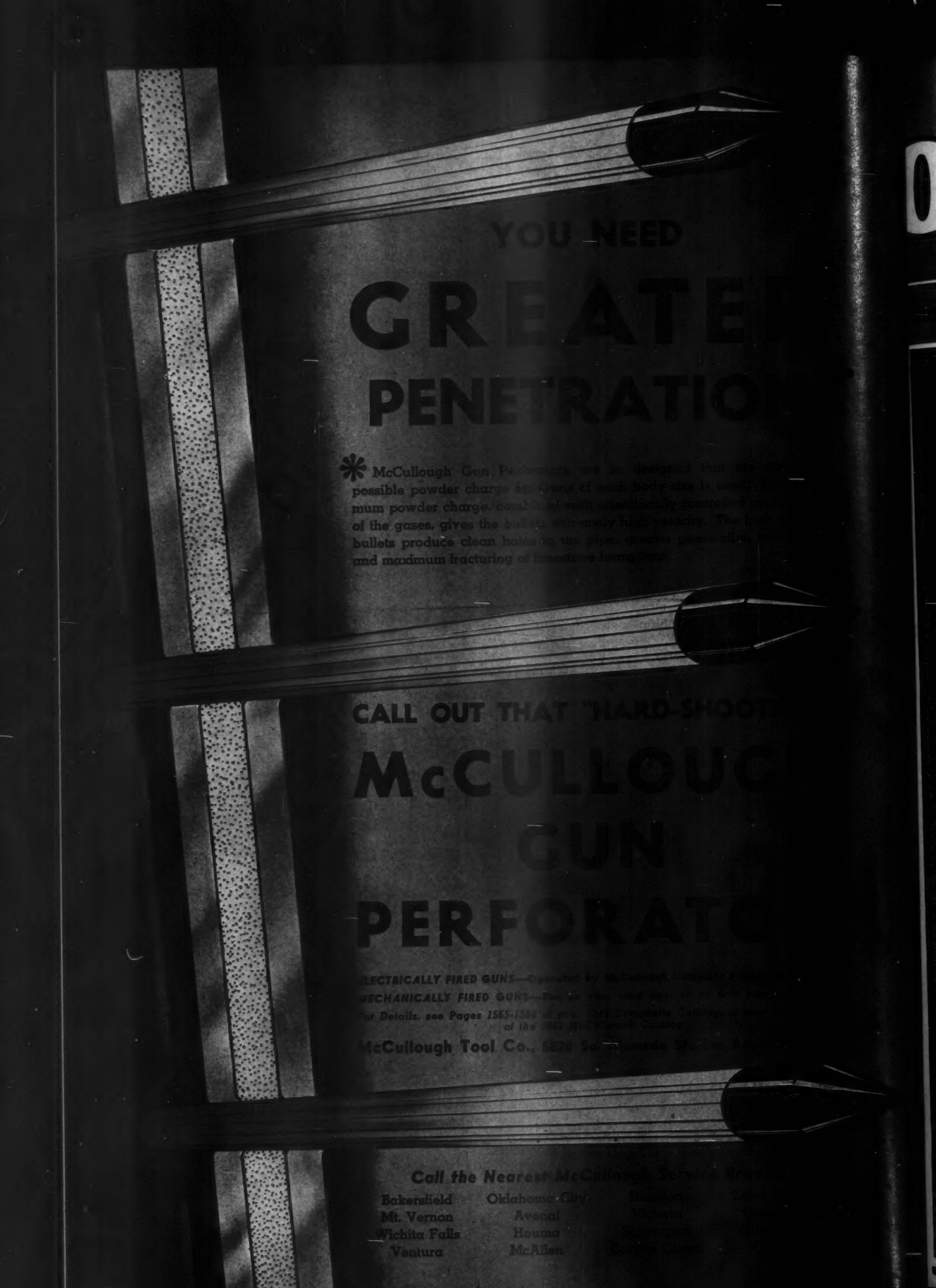
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